W911KB-09-R-0001

# PROPOSAL DOCUMENTS

## 2009-2011 TRANSITIONAL & MAINTENANCE DREDGING

## PORT OF ANCHORAGE

## ANCHORAGE, ALASKA

**SOLICITATION, OFFER, AND AWARD**
**SUPPLIES OR SERVICES AND PRICE COSTS**
**CONSTRUCTION SPECIFICATIONS/STATEMENT OF WORK**
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**INSTRUCTIONS, CONDITIONS, AND NOTICES TO OFFERORS**
**EVALUATION FACTORS FOR AWARD**



## APRIL 2009

## OPEN TO LARGE AND SMALL BUSINESS

**U.S. ARMY ENGINEER DISTRICT, ALASKA**
**CORPS OF ENGINEERS**
**P.O. BOX 898**
**ANCHORAGE, ALASKA 99506-0898**

**INCREASE PROFIT** **SUBMIT VE CHANGE**

PROPOSAL SCHEDULE
2009-2011 TRANSITIONAL & MAINTENANCE DREDGING
PORT OF ANCHORAGE, ALASKA

| Item No. | Description | Quantity | Unit | Unit Price | Amount |
|---|---|---|---|---|---|
| | BASE ITEMS (2009 - 2010) | | | | |
| 0001. | Bid, Performance, and Payment Bond Cost, 2009, complete | 1 | Job | Lump Sum | $_____ |
| 0002. | Mobilization and Demobilization, 2009, complete | 1 | Job | Lump Sum | $_____ |
| 0002AA. | First Dredge | 1 | Job | Lump Sum | $_____ |
| 0002AB. | Second Dredge | 1 | Job | Lump Sum | $_____ |
| 0002AC. | Third Dredge (If Needed) | 1 | Job | Lump Sum | $_____ |
| 0003. | North Extension and Barge Berths, Virgin Materials, Dredging, Disposal, and Acceptance Surveys, 2009-2010, complete | | | | |
| 0003AA. | First 1,700,000 CY | 1,700,000 | CY | $_____ | $_____ |
| 0003AB. | All Over 1,700,000 CY | 200,000 | CY | $_____ | $_____ |
| 0004. | Removal and Disposal of Boulders and Other Obstructions with any Dimension Greater Than 8 Feet, complete | | EA | $_____ | $_____ |
| 0004AA. | Boulders with any Dimension Greater Than 8 Feet and Less Than 16 Feet<br>First 25 | 25 | EA | $_____ | $_____ |
| 0004AB. | Boulders with any Dimension Greater Than 8 Feet and Less Than 16 Feet<br>All Over 25 | 15 | EA | $_____ | $_____ |
| 0004AC. | Concrete Pillbox | 1 | EA | $_____ | $_____ |

PROPOSAL SCHEDULE
2009-2011 TRANSITIONAL & MAINTENANCE DREDGING
PORT OF ANCHORAGE, ALASKA

| Item No. | Description | Quantity | Unit | Unit Price | Amount |
|---|---|---|---|---|---|
| 0005. | Pre-Dredge, Post-Dredge, and Intermediate Hydrographic Surveys, 2009, complete | _____ | EA | $_____ | $_____ |
| | OPTIONAL ITEMS (2009) | | | | |
| 0006. | Optional Partnering Session, 2009, complete | 1 | Job | Lump Sum | $_____ |
| | Total of Base and Optional Items (0001 thru 0006) for 2009 | | | | $_____ |
| | OPTIONAL ITEMS (2010) | | | | |
| 0007. | Optional Bid, Performance, and Payment Bond Cost, 2010, complete | 1 | Job | Lump Sum | $_____ |
| 0008. | Optional Mobilization and Demobilization, 2010, complete | 1 | Job | Lump Sum | $_____ |
| 0008AA. | First Dredge | 1 | Job | Lump Sum | $_____ |
| 0008AB. | Second Dredge | 1 | Job | Lump Sum | $_____ |
| 0008AC. | Third Dredge (If Needed) | 1 | Job | Lump Sum | $_____ |
| 0009. | Optional North Extension, Barge Berths, and Existing Port, Maintenance Dredging and Disposal, 2010, complete | | | | |
| 0009AA. | First 2,000,000 CY | 2,000,000 | CY | $_____ | $_____ |
| 0009AB. | All Over 2,000,000 CY | 800,000 | CY | $_____ | $_____ |
| 0010. | Optional South Extension, Virgin Materials, Dredging, Disposal, and Acceptance Surveys, 2010, complete | | | | |
| 0010AA. | First 650,000 CY | 650,000 | CY | $_____ | $_____ |
| 0010AB. | All Over 650,000 CY | 100,000 | CY | $_____ | $_____ |

PROPOSAL SCHEDULE
2009-2011 TRANSITIONAL & MAINTENANCE DREDGING
PORT OF ANCHORAGE, ALASKA

| Item No. | Description | Quantity | Unit | Unit Price | Amount |
|---|---|---|---|---|---|
| 0011. | Optional Pre-Dredge, Post-Dredge, and Intermediate Hydrographic Surveys, 2010, complete | _____ | EA | $_____ | $_____ |
| | Total of Optional Items (0007 thru 0011) for 2010 | | | | $_____ |
| | OPTIONAL ITEMS (2011) | | | | |
| 0012. | Optional Bid, Performance, and Payment Bond Cost, 2011, complete | 1 | Job | Lump Sum | $_____ |
| 0013. | Optional Mobilization and Demobilization, 2011, complete | 1 | Job | Lump Sum | $_____ |
| 0013AA. | First Dredge | 1 | Job | Lump Sum | $_____ |
| 0013AB. | Second Dredge | 1 | Job | Lump Sum | $_____ |
| 0013AC. | Third Dredge (If Needed) | 1 | Job | Lump Sum | $_____ |
| 0014. | If CLIN 0010 is not awarded, Optional South Extension, Virgin Materials, Dredging, Disposal, and Acceptance Surveys, 2011, complete | | | | |
| 0014AA. | First 650,000 CY | 650,000 | CY | $_____ | $_____ |
| 0014AB. | All Over 650,000 CY | 100,000 | CY | $_____ | $_____ |
| 0015. | Optional North Extension, Barge Berths, South Extension, and Remainder of Existing Port, Maintenance Dredging and Disposal, 2011, complete | | | | |
| 0015AA. | First 1,000,000 CY | 1,000,000 | CY | $_____ | $_____ |
| 0015AB. | All Over 1,000,000 CY | 400,000 | CY | $_____ | $_____ |

PROPOSAL SCHEDULE
2009-2011 TRANSITIONAL & MAINTENANCE DREDGING
PORT OF ANCHORAGE, ALASKA

| Item No. | Description | Quantity | Unit | Unit Price | Amount |
|---|---|---|---|---|---|
| 0016. | Optional Pre-Dredge, Post-Dredge, and Intermediate Hydrographic Surveys, 2011, complete | _____ | EA | $_____ | $_____ |

Total of Optional Items (0013 thru 0017) for 2011

Total of Base plus Optional Items (0001 thru 0017) 2009-2011: $_____

EVALUTIONS OF OFFERS.

1. AWARD: Award will be made in accordance with Section 00120 – EVALUATION FACTORS FOR AWARD.

2. INCOMPLETE PROPOSALS: Failure to submit an offer on all items in the schedule will result in an incomplete offer and the offer will be rejected. Unit or lump sum prices must be shown for each item within the schedule.

3. EXTENSIONS: All extensions of the unit prices shown will be subject to verification by the Government. In case of variation between the unit price and the extension, the unit price will govern.

4. SPECIAL BID CONDITION: If a modification to an offer based on unit prices is submitted which provides for a lump sum adjustment to the total offered price, the application of the lump sum adjustment to each unit price in the proposal schedule must be stated. If it is not stated, the offeror agrees that the lump sum adjustment shall be applied on a pro rata basis to every unit price in the proposal schedule.

-- End of Proposal Schedule --

**SECTION 00 73 00.00 29 SPECIAL CONTRACT REQUIREMENTS**

**SECTION 00 73 00.00 29 SPECIAL CONTRACT REQUIREMENTS**

**1. (SCR-24) SIGNAL LIGHTS:**

The Contractor shall display signal lights and conduct its operations in accordance with the General Regulations of the Coast Guard and EM 385-1-1 – Safety and Health Requirements Manual governing lights and day signals to be displayed by towing vessels with tows on which no signals can be displayed; vessels working on wrecks, dredges, and vessels engaged in laying cables or pipe or in submarine or bank protection operations, lights to be displayed on dredge pipe lines, and day signals to be displayed by vessels of more than 65 feet in length moored or anchored in a fairway or channel, and the passing by other vessels of floating plant working in navigable channels, as set forth in Commandant U.S. Coast Guard Instruction M16672.2, Navigation Rules: International-inland (COMDTINST M16672.2) of 33 CFR 81 Appendix A (International) and 33 CFR 84 through 33 CFR 89 (Inland) as applicable.

**2. (SCR-25) COMMUNICATION SECURITY:**

All communications with DOD organizations are subject to COMSEC review. Contractor personnel shall be aware that telecommunications networks are continually subject to intercept by unfriendly intelligence organizations. The DOD has authorized the military departments to conduct COMSEC monitoring and recording of telephone calls originating from or terminating at DOD organizations. Therefore, civilian Contractor personnel are advised that any time they place a call to or receive a call from Alaska District offices or Resident Engineer offices located on military installations, they are subject to COMSEC procedures. The Contractor will assume the responsibility for ensuring wideand frequent dissemination of the above information to all employees dealing with official DOD information.

**3. (SCR-40) KEY PERSONNEL, SUBCONTRACTORS AND OUTSIDE ASSOCIATES OR CONSULTANTS (May 2006):**

During the performance of this contract, no substitutions shall be made for Subcontractors, outside associates, consultants or individuals specifically identified in the Contractor's accepted proposal to perform key functions in the work, unless determined necessary by the Contracting Officer and approved in writing. Proposed substitutes shall have qualifications comparable to those of the persons being replaced.

**4. (SCR-45) SAFETY AND HEALTH REQUIREMENTS MANUAL, MA 385-1-1, U.S. ARMY CORPS OF ENGINEERS:**

In accordance with Contract Clause 52.236-13, ACCIDENT PREVENTION, the Contractor shall comply with the latest version of Engineer Manual 385-1-1, including any interim revisions, in effect at the time of the solicitation. EM 385-1-1 and its changes are available at http://www.hq.usace.army.mil/hqhome/. At the HQ homepage, select the tab "About Us", scroll down to HQ Offices, Then Safety & Occ. Health; at the Safety and Occupational Health Home page, select EM 385-1-1, then most recent dated edition & changes, English Version (controlling with changes), then Changes to EM 385-1-1.

**5. (SCR-53) GOVERNMENT-FURNISHED RFP DRAWINGS, SURVEYS AND SPECIFICATIONS** (JUL **02):**

This is to clarify that contract clause 252.236-7001, ***CONTRACT DRAWINGS AND SPECIFICATIONS,*** refers to any Government-furnished design or design criteria included in the Request for Proposal (RFP).

**6. (SCR-54) GOVERNMENT-FURNISHED SPECIFICATIONS AND DRAWINGS FOR**

**CONSTRUCTION (JUL 2003):**

This is to clarify that contract clause 252.236-21, ***SPECIFICATIONS AND DRAWINGS FOR CONSTRUCTION,*** refers to any specifications and drawings furnished in the Request for Proposal (RFP). The term "specifications" refers to the design criteria or scope of work, in addition to any attached specifications.

**7. (SCR-62) QUALIFICATIONS OF THE CONTRACTOR QUALITY CONTROL SYSTEMS MANAGER (CQCSM):**

(a) The CQC System Manager (CQCSM) described in Section 01 45 04.00 29 shall be assigned no other duties.

(b) In lieu of the education and experience requirements for the CQC System Manager listed in the CQC Section 01 45 04.00 29, the CQC Systems Manager may qualify provided they have a minimum of 7 years experience in construction quality control and are International Code Council (ICC) certified as a Commercial Building Inspector. For Military Family Housing projects, ICC Residential Building Inspector certification is required in lieu of the Commercial Building Inspector certification.

**8. (SCR-72) REQUIREMENTS FOR CONTRACTORS PERFORMANCE EVALUATION**

The Government will evaluate the contractor's performance and prepare a performance report using the Construction Contractor Appraisal Support System (CCASS), a web-based system (http://www.cpars.csd.disa.mil/). After an evaluation (interim or final) is generated by the Government, the contractor will have the ability to access, review and comment on the evaluation for a period of 30 days. If the Contractor fails to review, and or comment on the evaluation within the 30-day period, the Contracting Officer will take the appropriate steps to finalize the evaluation without the contractor's comments. It is the sole responsibility of the Contractor to purchase any necessary software to access the electronic system, including a Public Key Infrastructure (PKI) certificate. Details and information to access the system are listed below. The contractor shall provide the Contacting Officer the primary contact name and email address in order to receive the initial email and to access the system. Additional information and training material is available at http://www.cpars.csd.disa.mil/. This web site will give the contractor an understanding of the system and levels of access, the policies and regulations governing CCASS and the electronic workflow with particular attention to the Contractor comment function. Contractor users are required to obtain a PKI certificate in order to log into CCASS. PKI certificates can

be purchased from DoD's industries partners under External Certificate Authorities (ECAs). A list of ECAs vendors are available at http://www.cpars.csd.disa.mil/pki_info.htm.

**9. (SCR-101) DAMAGE TO WORK:**

The responsibility for damage to any part of the permanent work shall be as set forth in the clause of the contract entitled "Permits and Responsibilities". However, if, in the judgment of the Contracting Officer, any part of the permanent work performed by the Contractor is damaged, and this damage is not due to the failure of the Contractor to take reasonable precautions or to exercise sound engineering and construction practices in the conduct of the work, the Contractor shall make the repairs as ordered by the Contracting Officer and full compensation for such repairs will be made at the applicable contract unit or lump sum prices as fixed and established in the contract. If, in the opinion of the Contracting Officer, there are no contract unit or lump sum prices applicable to any part of such work an equitable adjustment pursuant to Clause, "Changes", of the contract, will be made as full compensation for the repairs of that part of the permanent work for which there are no applicable contract unit or lump sum prices. Except, as herein provided, damage to all work (including temporary construction), utilities, materials, equipment and plant shall be repaired to the satisfaction of the Contracting Officer at the Contractor's expense, regardless of the cause of such damage.

**10. (SCR-113) ENVIRONMENTAL LITIGATION:**

A. If the performance of all or part of the work is suspended, delayed, or interrupted due to an order of a court of competent jurisdiction as a result of environmental litigation, as defined below, the Contracting Officer, at the request of the Contractor, shall determine whether the order is due in any part to the acts or omissions of the Contractor or subcontractor at any tier not required by the terms of this contract. If it is determined that the order is not due in any part to acts or omissions of the Contractor or a subcontractor at any tier other than as required by the terms of this contract, such suspension, delay, or interruption shall be considered as if ordered by the Contracting Officer in the administration of this contract under the terms of the "Suspension of Work" clause of this contract. The period of such suspension, delay or interruption shall be considered unreasonable, and an adjustment shall be made for any increase in the cost of performance of this contract (excluding profit) as provided in that clause, subject to all the provisions thereof.

B. The term "environmental litigation", as used _herein, means a lawsuit alleging that the work will have an adverse effect on the environment or that the Government has not duly considered, either substantively or procedurally, the effect of the work on the environment.

--END OF SPECIAL CONTRACT REQUIREMENTS-

SECTION TABLE OF CONTENTS

DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01 19 40.00 29

SPECIAL ITEMS (CIVIL WORKS)



-- End of Section Table of Contents --

SECTION 01 19 40.00 29

SPECIAL ITEMS (CIVIL WORKS)

PART 1 GENERAL

1.1 SCOPE

Items included in this section cover special features and/or requirements which are not otherwise specified or indicated.

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

U.S. ARMY CORPS OF ENGINEERS (USACE)

| | |
|---|---|
| EM 1110-2-1003 | (Jan 2002) Engineering and Design - Hydrographic Surveying |
| EM 1110-1-1005 | (Jan 2007) Engineering and Design - Control and topographic Surveying |
| EM 385-1-1 | (2008) U.S. Army Corps of Engineers Safety and Health Requirements Manual |

1.3 ACCIDENT PREVENTION PLAN

The Contractor shall obtain the Contracting Officer's approval of the Accident Prevention Plan required by EM 385-1-1 prior to start of any work at the project site.

1.3.1 Navigation Safety and Coordination Plan

The Contractor shall submit a Navigation Safety and Coordination Plan as part of the Accident Prevention Plan. This plan shall include but not be limited to temporary lights at night and/or marker buoys during construction, "Notice to Mariners" and coordination with local officials, and reference to applicable U.S. Coast Guard regulations for construction vessels as well as SECTION 19, Floating Plant and Marine Activities, of EM 385-1-1.

1.3.2 Personal Locator Beacons (PLB) and Automated Identification Systems (AIS)

a. Due to local sea and weather conditions, the contractor is required to provide Activity Hazard Analysis (AHA's) pursuant to Section 01 35 29 - SAFETY AND OCCUPATIONAL HEALTH REQUIREMENTS, and must include Personal Locator Beacon procedures in the AHA's for the following:

(1) Personnel working on deck without handrails
(2) Personnel outside the handrails without fall protection
(3) Personal cleaning out drag heads and/or cutterheads

b. Personal Locator Beacons (PLB) and Receiver unit.

(1) The Contractor is required to furnish a Receiver unit located on the bridge or cab, on or near the ships helm, but within sight of the mate or operator of the dredge, tug or other floating plant operating the Vessel.

(2) As a minimum, the following personnel will be required to wear Personal Locator Beacons.

(a) All personnel in an area that is not protected by handrails must wear either a PLB or a fall protection system that meets all the requirements of EM 385-1-1. A fall protection system can only be worn where feasible, safe, and practical. Where it is not feasible, safe or practical to provide a fall arrest system, all personnel accessing unguarded decks, shall be equipped with a PLB.

(b) All personnel transiting in small boats including project visitors.

(c) Water quality monitoring crew, including the boat operator.

(d) All personnel actively conducting hydrographic surveys.

(3) Contractor is required to submit their Personal Locator Beacon system for review, prior to work. This can be submitted as part of the Accident Prevention Plan.

(4) The Contractor is required to supply six Personal Locator Beacons to the Government prior to commencement of work. These will be returned to the Contractor after final acceptance. In addition, the Contractor shall provide PLB's to all personnel transiting on their boats including Government visitors.

(5) All Personal Locator Beacons, (including the PLB(s) provided to the Contracting Officer or his representative, that malfunction or break, shall be removed from the project and immediately replaced by the Contractor regardless of the fault or cause. No dredging or disposal will be allowed to occur without the required number of PLB(s) on site. It is recommended that the contractor keep a sufficient number of spare PLB(s) on site to avoid delays in the dredging and disposal, should a PLB malfunction or be damaged. All personnel shall be trained in the use of PLBs. All personnel assigned to the project shall be briefed on the procedure if the system is activated.

(6) Specifications on Personal Locator Beacon (PLB)/ (Emergency Position Indicationg Radiobeacon (EPIRB) and direction/location finder.

(a) Miniature Personal Water Activated 121.5 MHz PLB/ EPIRB (Alerting Unit)

(b) PLB/ EPIRB's must alert a 121.5 MHz Direction finder within two minutes. (Base Unit)

(c) Examples of acceptable units are, Sea Marshall PLB8-LR 'SOS'

(alerting unit), Sea Marshall SARfinder 1003(base unit with 'SOS' man overboard alarm and location finder), ACR mini B 300 ILS H2ON EPIRB, ACR Vecta2 Direction Finder, or equivalent.

(7) Single Band Radios for monitoring PLB's. The Contractor shall keep single band radios at the following locations for monitoring the PLB signal. These radios shall be used for no other purpose. In all cases, a monitored radio shall be located within range of all personnel wearing PLBs. The PLB signal will be monitored by the Contractor.

(a) The following sites:
    (a) All contractor boats (except the dredge with the base unit)
    (b) Contractor's field office(s)
    (c) Government office
    (d) Government boat

(8) A directional antenna shall be mounted on the Contractor's boat that will be used as a rescue boat.

(9) Automated Identification Systems (AIS). All dredges and assist tugs used on this contract are required to have AIS installed and fully operational prior to the start of work and throughout the life of the contract. The Contractor shall have personnel trained and on-site that meet the U.S. Coast Guard's minimum requirements for the use of AIS.

## 1.4 FIRE SAFETY

The Contractor shall obtain a permit from the organization having jurisdiction over the job site for any welding or open flame work.

## 1.5 INSPECTION

### 1.5.1 General Requirements

The Contractor shall provide, install and maintain any required gauges, ranges, location marks and limit marks in proper order and position.

### 1.5.2 Contractor Furnished Equipment, Labor, Materials, and Transportation

The Contractor shall immediately furnish, upon the request of the Contracting Officer, the use of such boats, boatmen, laborers, and material forming a part of the ordinary and usual equipment and crew of the dredging plant as required by the Government for inspection of the work and suitable transportation from all points on shore designated by the Contracting Officer to and from the various points of plant. The Contractor shall also furnish 2 VHF handheld radios and/or 2 cellular telephones, as determined by the Contracting Officer, with a local Anchorage number subscribed to a local Anchorage system. The contractor shall also furnish necessary computer equipment and software as specified in SECTIONS 35 20 23 MECHANICAL DREDGE SILENT INSPECTOR and 35 22 24.00 29 HOPPER DREDGE SILENT INSPECTOR.

### 1.5.3 Noncompliance

Should the Contractor refuse, neglect, or delay compliance with these

requirements, the specific facilities may be furnished and maintained by the Contracting Officer, and the cost thereof will be deducted from any amounts due or to become due the Contractor.

## 1.6 EXAMINATION AND ACCEPTANCE

### 1.6.1 Examination

As soon as practicable after completion of each area of dredging, such work shall be thoroughly examined as specified in paragraph SURVEYS herein. Should any shoals, lumps, or other lack of depth 1 foot or more above Project Depth be disclosed by this examination, the Contractor will be required to remove same.

### 1.6.2 Acceptance

Acceptance of whole or part of the work and the deductions or corrections of deductions is final, except on evidence of collusion, fraud, or obvious error. The acceptance of a completed section shall not change the time of payment of the retained percentages of the whole or any part of the work.

## 1.7 CAMP FACILITIES

There are no Government owned camp facilities at the job site for the Contractor's use.

## 1.8 UTILITIES

The furnishing of water, electricity, and other utilities for work under this contract will be the Contractor's responsibility.

## 1.9 GOVERNMENT FIELD OFFICE

The Contractor shall provide the Contracting Officer's Representative with access to an office of at least 100 square feet, with a desk, copier; access to a toilet; and an area to observe the project operations while protected from the weather; to the satisfaction of the Contracting Officer. All costs shall be borne by the Contractor and included in the contract price.

## 1.10 PARTNERING

a. The Government intends to encourage the foundation of a cohesive partnership with the Contractor and its subcontractors. This partnership will be structured to draw on the strengths of each organization to identify and achieve reciprocal goals. The objectives are effective and efficient contract performance, intended to achieve completion within budget, on schedule, and in accordance with plans and specifications.

b. This partnership will be bilateral in makeup, and participation will be totally voluntary. Typical partnering costs include travel and per diem for attendees to the partnering site, meeting room rental, and facilitator costs. Implementation of this initiative will be a topic of discussion at the Pre-construction Conference. Any costs associated with implementing this partnership will be agreed to by both parties and will be shared equally subject to the cost limitations of Section 01 22 00.00 10 - MEASUREMENT, PAYMENT, paragraph 1.3.5. To implement this partnership initiative, it is anticipated that within 30 days after Notice to Proceed the Contractor's on-site Project Manager and the Government's on-site representative will attend a partnership development seminar followed by a team-building workshop to be attended by the Contractor's key on-site staff

and Government personnel. Follow-up workshops will be held periodically throughout the duration of the contract, as agreed to by both parties.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 COORDINATION WITH OTHERS

3.1.1 Traffic

Dredging may be interrupted by vessels maneuvering or moored anywhere within the dredging limits. The Contractor shall keep advised of vessel arrivals and departures and conduct operations so that interference with vessels will not occur. The Contractor's operations shall allow access to and from the Port at all times. All dredging activities, with special emphasis placed upon those dredging activities near the face of the Port and P.O.L. terminal docks, shall be coordinated with the Port of Anchorage Operations Manager at (907) 343-6200. The Contractor shall also coordinate with the Port of Anchorage Operations Manager in the unlikely event that it becomes necessary to have vessels moved out of the way of dredging operations. Pursuant to Contract Clause OTHER CONTRACTS (FAR 52.236-008) of this contract, the Contractor may be required to work in close proximity with other contractors and share the same disposal site. In the event that multiple contractors are required to work within the project limits, work areas for each contractor will be coordinated with the Contracting Officer's Representative and the Port of Anchorage Operations Manager at the required weekly coordination meetings.

3.2 SURVEYS

Surveys shall be performed through the use of an independent certified hydrographic surveyor for the Base requirement and option years 2010 and 2011 (if awarded). The independent certified hydrographic surveyor shall perform pre-dredge, intermediate, acceptance, and post-dredge surveys. Actual area(s) dredged between successive surveys shall be shown on each successive survey for each type of dredging equipment. Surveys are to be performed on days when ship traffic at the dock face is minimal in order to provide maximum coverage of the project area. Coordination with the Port Operations Manager, the Contractor Officer's Representative, and any other hydrographic survey vessels operating within the Survey Limits is required. All surveys shall be multi-beam and shall be recorded and legibly plotted across the entire survey limits as shown on the contract drawings. Care shall be taken to show the highest soundings, that is, those with the least depth, on the final drawings.

A pre-dredge survey of the entire survey limits shown on the contract drawings, shall be performed prior to the start of dredging. The Contractor shall notify the Contracting Officer in writing of its intent to perform a pre-dredge survey at least 10 days in advance.

Intermediate surveys shall generally be performed every Wednesday of each week following the pre-dredge survey and going through October 31 of the base year and option years (if awarded). During any hopper dredging operations, intermediate surveys shall also be performed on Mondays and Fridays for payment purposes. Intermediate may be re-scheduled, as needed, from the specified weekly sequence to accurately reflect final dredging conditions.

Acceptance surveys shall be performed as needed by the Contractor following the pre-dredge survey each year and going through October 31 of the base year

and option years (if awarded). Acceptance surveys apply only to transitional dredging of virgin materials.

The Post-dredge survey for each year awarded shall be performed within 1 day following completion of final dredging to verify final dredging results for the dredging season. The Contractor shall notify the Contracting Officer in writing of its intent to perform any post-dredge survey at least 3 days in advance. If the results of any post-dredge survey indicate that the specified project depth has not been achieved for any part of the project, dredging shall resume until the condition has been corrected and the post-dredge survey shall be repeated at no additional cost to the Government. This process shall continue until the specified project depth has been achieved.

3.2.1 Equipment and Survey Plan

The Contractor shall provide a survey plan to the Contracting Officer with information on electronic horizontal positioning, recording/depth-finding, and tidal equipment to be used in the work, demonstrating that it will provide surveys meeting all requirements of EM 1110-1-1005 for topographic Surveying and EM 1110-2-1003 for hydrographic surveying. The information provided shall include, as a minimum, the name, model and year of manufacture of the equipment, the electronic frequencies of the horizontal positioning and depth finding equipment, and the manufacturer's stated positioning accuracy and capability. In addition, the Contractor shall provide proof that the vessel to be used is safe and suitable for operation in the waters in which the work is to be performed, and that experienced staff will be used for operation of the vessel as well as the positioning and recording/depth finding equipment.

3.2.2 Quantity Computation Drawings

Quantity computations shall be performed for all surveys. Quantity computations for the pre-dredge survey shall show quantities available to project depth, required over-depth, and maximum pay-line for each area, as well as the total to each depth for all areas, calculated using the composite method and given in cubic yards. For all successive hydrographic surveys, including progress, intermediate and post-dredge, quantity computations shall show the survey-to-survey overall quantity Cut and Fill between surveys, as well as the quantities available to project depth, required over-depth, and maximum pay-line for each area, and the total to each depth for all areas. Calculations shall be performed using the composite method and given in cubic yards.

In addition, each successive survey after the pre-dredge, shall show computations for material removed within the area dredged between successive surveys. Quantity removed to the maximum pay-line for each dredge equipment type shall be shown separately, and likewise any over-dredging within the dredge area for that survey interval shall be computed and recorded. A running count of quantity removed to max pay-line and over-dredged shall be maintained and reported. Calculations shall be performed using the composite method and given in cubic yards.

Preliminary quantities shall be furnished to the Contracting Officer within 2 days after completion of any survey. Final quantities shall be furnished to the Contracting Officer within 10 days after completion of any survey.

3.2.3 Plan-View Drawings

3.2.3.1 Government-Furnished

The Contracting Officer will provide the Contractor with a CD-ROM disk(s) containing data in AutoCAD .DWG format meeting all AEC CAD standards, version 3.0, and capable of producing a basic survey contract drawing, complete with area map, borders, title block, and miscellaneous information. The Government will also provide the design control surfaces and the project tidal-geode model (KTD file from Hypac) that shall be used for the duration of this project.

3.2.3.2 Contractor Submittals

3.2.3.3 Surveys

The Contractor shall provide CD(s) of all raw survey data to the Contracting Officer's Representative in the field immediately following any survey. Within 2 days of completing the field data collection for each survey, the Contractor’s independent hydrographic surveyor shall reduce the survey depth soundings to the nearest one-tenth (0.1) foot and transmit AutoCAD (PNEZD comma-delimited ASCII file) point files, Civil 3D AutoCAD DWG data and all supporting files, and quantity computations to the Contracting Officer by email for review. All point file data shall be sorted, edited, tide corrected, and provided in a COGO format ready for used in AutoDESK software and shall not exceed 1.5 megabytes in size. The DWG plots shall include all pertinent title block information and dredged areas as required under SURVEYS above and shall meet all AEC CAD standards, version 3.0. Any information found in error on the Government-furnished drawings provided in paragraph Government-Furnished above, such as vicinity maps, notes, shorelines, floats, docks, navigational aids, control coordinates, etc., shall be replaced with accurate data as it becomes known. Each DWG drawing shall contain all pertinent data respective to it’s survey and be legibly and accurately plotted at the above specified spacing.

Within 10 days after completion of any survey, final survey drawings shall be stamped, signed, and dated by the independent hydrographic surveyor. All AutoCAD files shall be submitted on CD(s) in editable and searchable LAN DESKTOP or CIVIL 3D format for final Government review and signatures. All Surfaces or TINS shall be submitted in XML format. The CD(s) shall also include final volume computations, final Civil 3D data, all supporting files, and all raw survey data.

3.2.3.4 Daily Report of Hopper Dredge Operations

The Contractor shall provide a completed ENG Form 27A - Daily Report of Operations - Hopper Dredges, to the Contracting Officer for each day of hopper dredging. A blank ENG Form 27A is attached at the end of this section.

3.2.3.5 Field Notes

Upon completing any survey, quantity calculations, or plan-view drawings, the Contractor shall furnish the originals of all field notes, notebooks, fathometer data, sorted and corrected electronic point files, and any other records relating to the survey or to the layout of the work to the Contracting Officer. The Contractor shall retain copies of all such materials furnished to the Contracting Officer.

3.2.4 Existing Monuments

As part of the pre-dredge survey, the position, elevation, and condition of existing control points mentioned or shown on the drawings shall be verified. The Contracting Officer or his representative shall be notified of any deviations in position or elevation prior to making any corrections to the data. The Contracting Officer or his representative shall also be provided any subsequent corrected survey data of any of the control monuments, which shall be in writing and professionally stamped by a Professional Land Surveyor (PLS) (valid in the State of Alaska).

If, during the performance of the work, the Contractor removes or destroys previously set brass or aluminum survey caps, the survey caps, shall be reinstated by the Contractor at his expense.

3.2.5 Accuracy

All surveys shall conform to requirements specified in the most current USACE Engineering Manual EM 1110-1-1005 (Engineering and Design - Control and Topographic Surveying) and EM 1110-2-1003 (Engineering and Design - Hydrographic Surveying)Specifically, the following accuracies must be obtained:

a. Horizontal Control Point Closure Standard shall be Second Order Class II.
b. Distance closure error, after azimuth adjustment, shall not exceed 1 part in 20,000 parts.
c. Traverse adjustment shall be by the Least Squares method.
d. Levels shall meet NOAA standards for Tidal Bench Mark Ties and USACE Third Order for primary control monuments.
e. Vertical control shall be referenced to Mean Lower Low Water (MLLW = 0.0 feet) based on the 1983-2001 tidal epoch, holding current published NOAA/CO-OP values.
f. Horizontal control shall be Second Order Class II referenced to Alaska State Plane based on NAD83 in feet holding current NSRS/NGS published values.

3.2.6 Certification

The independent hydrographic surveyor shall be a Professional Land Surveyor (PLS) valid in the State of Alaska, and have current hydrographic certification from the American Congress for Surveying and Mapping (ACSM). The surveyor shall document at least 3 years of experience in hydrographic surveying of navigable channels.

3.3 EQUIPMENT

The Contractor agrees to keep equipment on the job sufficient to meet the requirements of the work. The equipment shall be in satisfactory operating condition and capable of safely and efficiently performing the work as set forth in the specifications and shall be subject to inspection by the Contracting Officer or his representative at all times. The equipment used shall be of a design and have characteristics similar to equipment which has been used successfully for a minimum of 3 years under similar conditions. It shall be the responsibility of the Contractor to prove the equipment has sufficient capacity to accomplish the work in a timely manner without damage to existing port facilities, or obstructing navigation. Prior to the start of any dredging, certifications showing the most recent load and performance test results, recent certification of inspection, and inspector's name, qualifications, and address shall be provided to the Contracting Officer for all cranes/derricks.

## 3.4 MOBILIZATION AND PROGRESS SCHEDULE

The Contractor shall furnish a complete mobilization and projected work progress schedule within 10 days of Notice to Proceed. The equipment listed, manpower to be utilized, and proposed work schedule shall be furnished in sufficient detail to permit determination by the Contracting Officer that the contract requirements can readily be met.

## 3.5 EQUIPMENT SCHEDULE

The PLANT AND EQUIPMENT SCHEDULE (Sample Letter) attached to this section shall be completed by the Contractor as hereafter described, and submitted within 10 days of receipt of the Notice to Proceed.

### 3.5.1 Number

For equipment, give identifying number or name.

### 3.5.2 Type

Under this heading give general description. Sufficient detailed information shall be furnished to properly delineate the proposed equipment and operation.

### 3.5.3 Capacity

Under this heading, state the estimated capacity of the plant in cubic yards per day when working materials similar to those anticipated in the work, for each location, accounting for the variable distances to disposal sites. No reduction in the stated capacity of the plant employed on the work shall be made except by written permission of the Contracting Officer. (The measure of the "capacity of the plant" shall be its actual performance on the work which these specifications apply).

## 3.6 PLANT AND EQUIPMENT SCHEDULE

Minimum Plant To Be Used* Crew Age and No. Type Capacity Requirements Condition Location

*NOTE: In preparing the above tabulation, the Contractor shall insert the following information under the appropriate heading, using a separate line for each major item and additional pages if necessary.

a. Number. For dredges, towboats, and material scows give identifying number or name.

b. Type. Under this heading give description as follows: For clamshell dredges, show bucket capacity in cubic yards, horsepower of hoist engine, type of power, number of swings per hour, and maximum draft, beam, and length of dredge. Show pump size and pump and cutter-head horsepower (hp) for pipeline dredges. For hopper dredges, show number of drag arms including diameter(s) and length(s), hopper capacity, pump size(s) and horsepower, maximum draft, length, beam, and type and horsepower of propulsion. Show maximum draft, length, beam, and hopper capacity of material scows. Show maximum draft, length, beam, and horsepower of towboat. Indicate number of crew required for each item of plant.

## 3.7 ATTACHMENTS

SAMPLE LETTER

Daily Report of Operations – Hopper Dredges (ENG Form 27A)

S A M P L E  L E T T E R

Contracting Officer
Date_____
Address (as stated in Notice of Award)

SUBJECT: Warranty Provisions, Contract

GENTLEMEN:

This is to acknowledge our responsibility in connection with the warranty provisions of this contract as set forth in the contract specifications.

The following items, equipment or systems furnished or installed under this contract are hereby warranted against defective design, material and workmanship for a period as indicated:

| Warranted Item, Equipment or System | Identification Serial Number, Etc. | Warranty Expires at 11:59 PM Std. Time |
|---|---|---|

Upon receipt of notice from the Government of failure of any part or parts of the warranted item, equipment, or system during the warranty period, the affected part or parts will be replaced promptly with new parts. Such replacement will include furnishing and installing the new part or parts, making all necessary repairs, restoring the item, equipment, or system to the operating condition specified in this contract and making all such tests as are necessary to ensure that there are no remaining defects. Such tests will be performed in the presence of the Representative of the Using Agency indicated below.

We are responsible to _____ for the warranty provisions of this contract. Correspondence regarding the ~~failure of any of the preceding items~~, equipment or systems covered by the warranty provisions of this contract should be addressed to:

Telephone Number:

Very truly yours,

Signed:
Title: _____
Organization:

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MEASUREMENT AND PAYMENT



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SECTION 01 22 00.00 10

MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.1 GENERAL

Payment will be made at the contract unit or lump sum price. The price for each item shall constitute full compensation for furnishing all labor, equipment, and materials, and performing all operations necessary to construct and complete the work in accordance with the specifications and drawings. Payment shall be considered as full compensation, notwithstanding that minor features of the work to complete items may not be mentioned. Deviation in the actual quantity, either above or below the estimated quantity shown, shall not be made a basis for a claim for adjustment in the contract unit price, except as otherwise specified in the CONTRACT CLAUSES under SECTION 00700, FAR 52.211-0018 VARIATIONS IN ESTIMATED QUANTITIES, and EFAR 52.211-5001 VARIATIONS IN ESTIMATED QUANTITIES - SUBDIVIDED ITEMS. Work paid for under one item will not be paid for under any other item.

1.2 MEASUREMENT

1.2.1 Job or Each

Items measured as a "Job" or "Each" (EA) will be measured for payment as a complete item.

1.2.2 Cubic Yard (CY)

Measurement for any clamshell dredging shall be accomplished by calculating the net volume of material removed from within the dredging prism as calculated by "Barge Count" below. Measurement for any hopper dredging shall be accomplished by calculating the net volume of material removed from within the dredging prism as calculated by "Hopper Dredge" and "Cutter Head" below. Over-dredging shall be calculated by comparing successive hydrographic surveys and calculating the net volume of material removed as specified in Section 01 19 40.00 - SPECIAL ITEMS, and by "Hopper Dredge" below. Such hydrographic surveys shall also be used to supplement barge counts as specified below. Partial payments for all dredging shall be adjusted to deduct any quantities removed below the maximum pay line or outside the dredging prism as shown on the contract drawings and as determined from hydrographic surveys.

1.2.3 Barge Count

Prior to commencement of any clamshell dredging, the Contractor shall furnish the dimensions, weight, and volume displacement charts for each of the barges or scows to be used on the project. Displacement charts shall be certified by a registered engineer, marine surveyor, or naval architect. The volume of material placed in hoppers or scows for transport to the disposal site will be calculated. For converting scow or barge displacement to tonnage, salt- water density will be taken as 62.9 pounds per cubic foot based on the average salinity measured over one dredge season. Tonnage will then be converted to volume by using a sediment density factor. The density factor shall be calculated by the Contractor by weighing a sediment sample taken from a full barge or scow. All sampling, weighing, and

calculations related to the density factor shall be performed in the presence of the Contracting Officer's Representative. The sediment density factor shall be recalculated by the Contractor whenever the material changes or upon request of the Contracting Officer's Representative. All calculations are subject to approval by the Contracting Officer's Representative. All barges and dumping vessels shall have staff gauges for measuring vessel displacement, placed and mounted in positions approved by the Contracting Officer. All dumping vessels shall be loaded as evenly as possible to obtain uniform distribution of the dredged material. An adjustment in volume will be made to compensate for water trapped in a dumping vessel. If any material remains in the dumping vessel upon its return from the disposal site, displacement measurements will be taken prior to reloading, and an adjustment will be made to the next disposal measurement.

1.2.4 Hopper Dredge

Any Hopper dredging shall be accomplished as follows, with reference to the attachment at the end of this Section:

The Contractor shall provide the following quantity computations of all dredged materials by the average-end-area method on 25 foot spaces.

(1) For each survey interval compute the quantity available to Project Depth, the Required Depth, and Maximum Payline for each designated survey area, including the north and south side slopes.

(2) Find the actual Cut and Fill quantities by doing a survey to survey computation for each survey interval.

(3) Compute the quantity removed by the Hopper Dredge by confining computations to the area covered by the Hopper for each survey interval.

(4) Compute the over dredging for the hopper by comparing the difference of Fill quantity to the Maximum Payline for each survey in their respective intervals. The area for over-dredging is defined by item (3) above.

(5) Shoaling is computed by taking the Maximum Pay Quantity available on the previous survey, subtracting the Maximum Pay Quantity available on the current survey. That quantity is then subtracted from the difference in the raw quantity removed by the Hopper dredge for that interval. This number is the total shoaled amount. The total shoaled amount is multiplied by the ratio of the area covered by the hopper over the area designated for dredging for each interval. The contour for the Maximum Pay depth is used to define the outer limit for both the hopper dredge area and the designated dredge area. A sample computation is attached.

All quantity computations and electronic versions of each survey shall be furnished to the Contracting Officer within four (4) days after the completion of any survey. The preliminary electronic point files (COGO format), used for quantity computations, shall be submitted with the electronic copies of each survey.

1.3 PAYMENT

1.3.1 Items 0001, 0007 (if awarded), and 0013 (if awarded), Bid, Performance, and Payment Bond Cost

Payment will be made at the contract lump sum price and shall constitute full compensation for Bid, Performance, and Payment Bond Cost in accordance with SECTION 00700, FAR 52.228-0001 - BID GUARRANTEE, FAR 52.228-0002 - ADDITIONAL BOND SECURITY, and FAR 52.228-0015 - PERFORMANCE AND PAYMENT BONDS - CONSTRUCTION.

1.3.2 Items 0002AA, 0002AB, 0002AC, 0008AA (if awarded), 0008AB (if awarded), 0008AC (if awarded), 0014AA (if awarded), 0014AB (if awarded), and 0014AC (if awarded), Mobilization and Demobilization

Payment will include transportation of plant, equipment, supplies, and appurtenances to and from the project; assembly of plant; and removal of same after completion of the project. Payment will be made in accordance with SECTION 00700, DFAR 252.236-7004 PAYMENT FOR MOBILIZATION AND DEMOBILIZATION.

1.3.3 Items 0003AA, 0003AB, 0009AA (if awarded), 0009AB (if awarded), 0010AA (if awarded), 0010AB (if awarded), 0011AA (if awarded), 0011AB (if awarded), 0015 (if awarded), 0016AA (if awarded), and 0016AB (if awarded), Dredging, Disposal, and Acceptance Surveys

Payment will be made at the contract unit or lump sum price and shall constitute full compensation for performing all dredging and disposal. Payment will be in accordance with above paragraphs GENERAL and MEASUREMENT. In no case will payment be made for material removed from below the maximum pay-line or outside the dredging prism as shown.

1.3.4 Items 0004AA (if awarded), 0004AB (if awarded), and 0004AC (if awarded), Removal and Disposal of Boulders and Other Obstructions with any Dimension Greater Than 8 Feet and Less that 16 Feet

Payment will be made at the contract unit price and shall constitute full compensation for performing all dredging and disposal. Payment will be in accordance with above paragraphs GENERAL and MEASUREMENT.

1.3.5 Items 0005, 0012 (if awarded), and 0017 (if awarded), Hydrographic Surveys

Payment will be made at the contract unit price for each survey and shall constitute full compensation for performing the surveys as specified in SECTION 01 19 40.00 29 - SPECIAL ITEMS. If the Contractor is required to re-perform a post-dredge survey because re-dredging was required, no additional payment will be made. Under no circumstance will any payment be made for any survey until all requirements of SECTION 01 19 40.00 29, paragraphs 1.6 through 1.6.2, paragraphs 3.2.7 through 3.2.7.2.1, and paragraph 3.2.7.2.3.

1.3.6 Item Optional 0006 (if awarded), Partnering Session

Payment will include a maximum of fifty percent (50%) of the total lump sum price for conducting a partnering session or $30,000.00, whichever is less.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 CONTRACT COST BREAKDOWN

The Contractor shall furnish within 30 days after the date of Notice to Proceed, and prior to the submission of its first partial payment estimate, a breakdown of its lump-sum pay item or items which will be reviewed by the Contracting Officer as to propriety of distribution of the total cost to the various accounts. Any unbalanced items as between early and late payment items or other discrepancies will be revised by the Contracting Officer to agree with a reasonable cost of the work included in the various items. This contract cost breakdown will then be utilized as the basis for progress payments to the Contractor.

3.2 ATTACHMENT

Sample Hopper Dredge Quantity Computation

**Sample Hopper Dredge Quantity Computation**

| Survey Interval | Qty Avail 1st Survey<br>A | Qty Avail 2nd Survey<br>B | Change in Qty Avail<br>C = A-B | Raw Qty Remove to -38<br>D | Shoal Qty for Interval<br>E=D-C | Ratio of Dredge Area<br>F | Qty Adjusted for Shoal<br>G=E *F |
|---|---|---|---|---|---|---|---|
| 11-13 Jul | 87,500 | 85,000 | 2,500 | 10,000 | 7,500 | 69% | 5,175 |
| 13-16 Jul | 85,000 | 89,152 | -4,152 | 7,500 | 11,652 | 75% | 8,739 |
| 16-18 Jul | 89,152 | 89,000 | 152 | 5,000 | 4,848 | 85% | 4,121 |
| 18-20 Jul | 89,000 | 79,000 | 10,000 | 10,000 | 0 | 90% | 0 |
| 20-23 Jul | 79,000 | 70,000 | 9,000 | 7,000 | -2,000 | 94% | 0 |
| | | | Total | 39,500 | | | 18,035 |
| | | | | | | | |
| | | | Summary | 39,000 | Raw Qty Removed | | |
| | | | + | 18,035 | Shoal Adjustment | | |
| | | | - | 5,000 | Over Dredge Q t y | | |
| | | | | 52,535 | Total Payable Qty | | |

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PROJECT SCHEDULE

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PROJECT SCHEDULE

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

U.S. ARMY CORPS OF ENGINEERS (USACE)

| | |
|---|---|
| ER 1-1-11 | (1995) Progress, Schedules, and Network Analysis Systems |
| ECB 2005-10 | (2005) Scheduling Requirements for Testing of Mechanical Systems in Construction |

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the [11]G[11] designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Project Schedule; G

1.3 QUALIFICATIONS

Designate an authorized representative to be responsible for the preparation of the schedule and all required updating (activity status) and preparation of reports. The authorized representative shall have previously developed, created, and maintained at least 20 electronic schedules for projects similar in nature and complexity to this project and shall be experienced in the use of the scheduling software that meets the requirements of this specification.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 GENERAL REQUIREMENTS

Prepare for approval a Project Schedule, as specified herein, pursuant to the Contract Clause, SCHEDULE FOR CONSTRUCTION CONTRACTS. Show in the schedule the sequence in which the Contractor proposes to perform the work and dates on which the Contractor contemplates starting and completing all schedule activities. The scheduling of the entire project, including the design and construction sequences, is required. The scheduling of construction is the responsibility of the Contractor. Contractor

management personnel shall actively participate in its development. Subcontractors and suppliers working on the project shall also contribute in developing and maintaining an accurate Project Schedule. The schedule must be a forward planning as well as a project monitoring tool.

3.1.1 Approved Project Schedule

Use the approved Project Schedule to measure the progress of the work and to aid in evaluating time extensions. The schedule shall be cost loaded and activity coded. The schedule will provide the basis for all progress payments. If the Contractor fails to submit any schedule within the time prescribed, the Contracting Officer shall withhold approval of progress payments until the Contractor submits the required schedule.

3.1.2 Schedule Status Reports

Provide a Schedule Status Report on at least a monthly basis. If, in the opinion of the Contracting Officer, the Contractor falls behind the approved schedule, the Contractor shall take steps necessary to meet the approved progress schedule. In this circumstance, the Contracting Officer may require the Contractor to increase the number of shifts, overtime operations, days of work, and/or the amount of construction plant, and to submit for approval any supplementary schedule or schedules as the Contracting Officer deems necessary to demonstrate how the approved rate of progress will be regained without additional cost to the Government.

3.1.3 Default Terms

Failure of the Contractor to comply with the requirements of the Contracting Officer shall be grounds for a determination by the Contracting Officer that the Contractor is not prosecuting the work with sufficient diligence to ensure completion within the time specified in the contract. Upon making this determination, the Contracting Officer may terminate the Contractor's right to proceed with the work, or any separable part of it, in accordance with the default terms of the contract.

3.2 BASIS FOR PAYMENT AND COST LOADING

Use the schedule as the basis for determining contract earnings during each update period and therefore the amount of each progress payment. Lack of an approved schedule update or qualified scheduling personnel will result in an inability of the Contracting Officer to evaluate contract earned value for the purposes of payment. Failure of the Contractor to provide all required information will result in the disapproval of the preliminary, initial and subsequent schedule updates. In the event schedule revisions are directed by the Contracting Officer and those revisions have not been included in subsequent revisions or updates, the Contracting Officer shall withhold approval of progress payments, each payment period, until such revisions to the Project Schedule have been made. Activity cost loading shall be reasonable, as determined by the Contracting Officer. The aggregate value of all activities coded to a contract CLIN shall equal the value of the CLIN on the Schedule.

3.3 PROJECT SCHEDULE DETAILED REQUIREMENTS

The computer software system utilized to produce and update the Project Schedule shall be capable of meeting all requirements of this specification. Failure of the Contractor to meet the requirements of this

specification will result in the disapproval of the schedule. Scheduling software that meets the activity coding structure defined in the Standard

Data Exchange Format (SDEF) in ER 1-1-11 are Primavera Project Planner by Primavera, and Open Plan by Deltek.

3.3.1 Critical Path Method

Use the Critical Path Method (CPM) of network calculation to generate the Project Schedule. Prepare the Project Schedule using the Precedence Diagram Method (PDM).

3.3.2 Level of Detail Required

Develop the Project Schedule to an appropriate level of detail. Failure to develop the Project Schedule to an appropriate level of detail, as determined by the Contracting Officer, will result in its disapproval. The Contracting Officer will consider, but is not limited to, the following characteristics and requirements to determine appropriate level of detail:

3.3.2.1 Activity Durations

Reasonable activity durations are those that allow the progress of ongoing activities to be accurately determined between update periods. Less than 2 percent of all non-procurement activities shall have Original Durations (OD) greater than 20 work days or 30 calendar days. Procurement activities are defined herein.

3.3.2.2 Procurement Activities

The schedule must include activities associated with the submittal, approval, procurement, fabrication and delivery of long lead materials, equipment, fabricated assemblies and supplies. Long lead procurement activities are those with an anticipated procurement sequence of over 90 calendar days. A typical procurement sequence includes the string of activities: submit, approve, procure, fabricate, and deliver.

3.3.2.3 Mandatory Tasks

The following tasks must be included and properly scheduled:

a. Submission, review and acceptance of dredging Plan.

3.3.2.4 Government Activities

Show Government and other agency activities that could impact progress. These activities include, but are not limited to: approvals, inspections, and Notice to Proceed (NTP) for phasing requirements.

3.3.2.5 Activity Responsibility Coding (RESP)

Assign responsibility Code for all activities to the Prime Contractor, Subcontractor or Government agency responsible for performing the activity. Activities coded with a Government Responsibility code include, but are not limited to: Government approvals, Government design reviews, environmental permit approvals by State regulators, Government Furnished Equipment (GFE) and Notice to Proceed (NTP) for phasing requirements. Code all activities not coded with a Government Responsibility Code to the Prime Contractor or Subcontractor responsible to perform the work. Activities shall not have more than one Responsibility Code. Examples of acceptable activity code values are: GOVT (for USACE) and SURV (for Surveyor). Unacceptable code values are abbreviations of the names of subcontractors.

3.3.2.6 Activity Work Area Coding

Assign Work Area code to activities based upon the work area in which the activity occurs. Define work areas based on resource constraints or space constraints that would preclude a resource, such as a particular trade or craft work crew, from working in more than one work area at a time due to restraints on resources or space. Examples of Work Area Coding include Port expansion phases. Activities shall not have more than one Work Area Code. Not all activities are required to be Work Area coded. A lack of Work Area coding will indicate the activity is not resource or space constrained.

3.3.2.7 Contract Changes/Requests for Equitable Adjustment (REA) Coding (MODF)

Assign Activity code to any activity or sequence of activities added to the schedule as a result of a Contract Modification, when approved by the Contracting Officer, with a Contract Changes/REA Code. Key all Code values to the Government's modification numbering system. Any activity or sequence of activities added to the schedule as a result of alleged constructive changes made by the Government may be added to a copy of the current schedule, subject to the approval of the Contracting Officer. Assign Activity codes for these activities with a Contract Changes/REA Code. Key the code values to the Contractor's numbering system. Approval to add these activities does not necessarily mean the Government accepts responsibility and therefore liability for such activities and any associated impacts to the schedule, but rather the Government recognizes such activities are appropriately added to the schedule for the purposes of maintaining a realistic and meaningful schedule. Such activities shall not be Responsibility Coded to the Government unless a contract modification is awarded. An activity shall not have more than one Contract Changes/REA Code.

3.3.2.8 Contract Line Item (CLIN) Coding (BIDI)

Code all activities to the CLIN on the Contract Line Item Schedule to which the activity belongs. An activity shall not contain more than one CLIN Item Code. CLIN Item code all activities, even when an activity is not cost loaded.

3.3.2.9 Phase of Work Coding (PHAS)

Assign Phase of Work Code to all activities based upon the phase of work in which the activity occurs. Code activities to a Construction Phase. Code fast track construction phases proposed by the Contractor to allow filtering and organizing the schedule by fast track design and construction packages. If the contract specifies construction phasing with separately defined performance periods, identify a Construction Phase Code to allow filtering and organizing the schedule accordingly. Each activity shall be identified with a single project phase and have only one Phase of Work code.

3.3.2.10 Category of Work Coding (CATW)

Assign Category of Work Code to all Activities based upon the category of work to which the activity belongs. Category of Work Code must include, but is not limited to: construction submittal approvals, Acceptance, Procurement, Fabrication, Delivery, Weather Sensitive Installation, Non-Weather Sensitive Installation, Test and Turnover. Assign a Category of Work Code to each activity. Each activity shall have only one Category of Work Code.

3.3.2.11 Definable Features of Work Coding (FOW1, FOW2, FOW3)

Assign a Definable Feature of Work Code to appropriate activities based on

the definable feature of work to which the activity belongs. Definable Feature of Work is defined in Specification Section 01 45 01 USACE QUALITY CONTROL. An activity shall not have more than one Definable Feature of Work Code. Not all activities are required to be Definable Feature of Work Coded.

3.3.3 Scheduled Project Completion and Activity Calendars

The schedule interval shall extend from NTP date to the required contract completion date. The contract completion activity (End Project) shall finish based on the required contract duration in the accepted contract proposal, as adjusted for any approved contract time extensions. The first scheduled work period shall be the day after NTP is acknowledged by the Contractor. Schedule activities on a calendar to which the activity logically belongs. Activities may be assigned to a 7 day calendar when the contract assigns calendar day durations for the activity such as a Government Acceptance activity. If the Contractor intends to perform physical work less than seven days per week, schedule the associated activities on a calendar with non-work periods identified including weekends and holidays. Assign the Category of Work Code - Weather Sensitive Installation to those activities that are weather sensitive. Original durations must account for anticipated normal adverse weather. The Government will interpret all work periods not identified as non-work periods on each calendar as meaning the Contractor intends to perform work during those periods.

3.3.3.1 Project Start Date

The schedule shall start no earlier than the date on which the NTP was acknowledged. Include as the first activity in the project schedule an activity called "Start Project"( or NTP). The "Start Project" activity shall have an "ES" constraint date equal to the date that the NTP was acknowledged, and a zero day duration.

3.3.3.2 Schedule Constraints and Open Ended Logic

Schedule calculations shall result in a negative float when the calculated early finish date of the last activity is later than the contract completion date. Include as the last activity in the project schedule an activity called "End Project". The "End Project" activity shall have an "LF" constraint date equal to the contract completion date for the project, and with a zero day duration or by using the "project must finish by" date in the scheduling software. The schedule shall have no constrained dates other than those specified in the contract. The use of artificial float constraints such as "zero fee float" or "zero total float" are prohibited. There shall only be 2 open ended activities: Start Project (or NTP) with no predecessor logic and End Project with no successor logic.

3.3.3.3 Early Project Completion

In the event the Preliminary or Initial project schedule calculates an early completion date of the last activity prior to the contract completion date, the Contractor shall identify those activities that it intends to accelerate and/or those activities that are scheduled in parallel to support the Contractor's "early" completion. The last activity shall have a late finish constraint equal to the contract completion date and the schedule will calculate positive float. The Government will not approve an early completion schedule with zero float on the longest path. The Government is under no obligation to accelerate activities for which it is responsible to support a proposed early contract completion.

3.3.4 Interim Completion Dates

Constrain contractually specified interim completion dates to show negative float when the calculated early finish date of the last activity in that phase is later than the specified interim completion date.

3.3.4.1 Start Phase

Include as the first activity for a project phase an activity called "Start Phase X" where "X" refers to the phase of work. The "Start Phase X" activity shall have an "ES" constraint date equal to the date on which the NTP was acknowledged, and a zero day duration.

3.3.4.2 End Phase

Include as the last activity for a project phase an activity called "End Phase X" where "X" refers to the phase of work. The "End Phase X" activity shall have an "LF" constraint date equal to the specified completion date for that phase and a zero day duration.

3 .3 .4.3 Phase "X" Hammock

Include a hammock type activity for each project phase called "Phase X" where "X" refers to the phase of work. The "Phase X" hammock activity shall be logically tied to the earliest and latest activities in the phase.

3.3.5 Default Progress Data Disallowed

Do not automatically update Actual Start and Finish dates with default mechanisms that may be included in the scheduling software. Activity Actual Start (AS) and Actual Finish (AF) dates assigned during the updating process shall match those dates provided from Contractor Quality Control Reports. Failure of the Contractor to document the AS and AF dates on the Daily Quality Control report for every in-progress or completed activity, and failure to ensure that the data contained on the Daily Quality Control reports is the sole basis for schedule updating shall result in the disapproval of the Contractor's updated schedule and the inability of the Contracting Officer to evaluate Contractor progress for payment purposes. Updating of the percent complete and the remaining duration of any activity shall be independent functions. Disable program features which calculate one of these parameters from the other.

3.3.6 Out-of-Sequence Progress

Activities that have progressed before all preceding logic has been satisfied (Out-of-Sequence Progress) will be allowed only on a case-by-case basis subject to approval by the Contracting Officer. Propose logic corrections to eliminate all out of sequence progress or justify not changing the sequencing for approval prior to submitting an updated project schedule. Correct out of sequence progress that continues for more than two update cycles by logic revision, as approved by the Contracting Officer.

3.3.7 Negative Lags and Start to Finish Relationships

Lag durations contained in the project schedule shall not have a negative value. Do not use Start to Finish (SF) relationships.

### 3.3.8 Calculation Mode

Schedule calculations shall retain the logic between predecessors and successors even when the successor activity starts and the predecessor activity has not finished. Software features that in effect sever the tie between predecessor and successor activities when the successor has started and the predecessor logic is not satisfied ("progress override") will not be allowed.

### 3.3.9 Milestones

The schedule must include milestone activities for each significant project event including but not limited to: milestone activities for dredging and disposal.

## 3.4 PROJECT SCHEDULE SUBMISSIONS

Provide the submissions as described below. The data CD, reports, and network diagrams required for each submission are contained in paragraph SUBMISSION REQUIREMENTS.

### 3.4.1 Preliminary Project Schedule Submission

Submit the Preliminary Project Schedule, defining the Contractor's planned operations for the first 90 calendar days for approval within 15 calendar days after the NTP is acknowledged. The approved Preliminary Project Schedule will be used for payment purposes not to exceed 90 calendar days after NTP. Completely cost load the Preliminary Project Schedule to balance the contract award CLINS shown on the Price Schedule. Detail it for the first 90 calendar days. It may be summary in nature for the remaining performance period. It must be early start and late finish constrained and logically tied as previously specified. The Preliminary Project Schedule forms the basis for the Initial Project Schedule specified herein and must include all of the required Plan and Program preparations, submissions and approvals identified in the contract (for example, Quality Control Plan, Safety Plan, and Environmental Protection Plan) as well as design activities, the planned submissions of all early design packages, permitting activities, design review conference activities and other non-construction activities intended to occur within the first 90 calendar days. Schedule any construction activities planned for the first 90 calendar days after NTP. Constrain planned construction activities by Government acceptance of the associated design package(s) and all other specified Program and Plan approvals. Activity code any activities that are summary in nature after the first 90 calendar days with Responsibility Code (RESP) and Feature of Work code (FOW1, FOW2, FOW3).

### 3.4.2 Initial Project Schedule Submission

Submit the Initial Project Schedule for approval within 42 calendar days after NTP. The schedule shall demonstrate a reasonable and realistic sequence of activities which represent all work through the entire contract performance period. The Initial Schedule shall be at a reasonable level of detail as determined by the Contracting Officer.

### 3.4.3 Design Package Schedule Submission

Not applicable

### 3.4.4 Periodic Schedule Updates

Based on the result of the meeting, specified in PERIODIC SCHEDULE UPDATE MEETINGS, submit periodic schedule updates. These submissions will enable the Contracting Officer to assess Contractor's progress. If the Contractor fails or refuses to furnish the information and project schedule data, which in the judgement of the Contracting Officer or authorized representative is necessary for verifying the Contractor's progress, the Contractor shall be deemed not to have provided an estimate upon which progress payment may be made.

### 3.4.5 Standard Activity Coding Dictionary

Use the activity coding structure defined in the Standard Data Exchange Format (SDEF) in ER 1-1-11, Appendix A. This exact structure is mandatory, even if some fields are not used. A template SDEF compatible schedule backup file (sdef.prx) is available on the QCS website: www.rmssupport.com. The SDEF format is as follows:

| Field | Activity Code | Length | Description |
|---|---|---|---|
| 1 | WRKP | 3 | Workers per Day |
| 2 | RESP | 4 | Responsible Party (e.g. GC, subcontractor, USACE) |
| 3 | AREA | 4 | Area of Work |
| 4 | MODF | 6 | Modification or REA number |
| 5 | BIDI | 6 | Bid Item (CLIN) |
| 6 | PHAS | 2 | Phase of Work |
| 7 | CATW | 1 | Category of Work |
| 8 | FOW1 | 10 | Feature of Work (used up to 10 characters in length) |
| 9 | FOW2 | 10 | Feature of Work (used up to 20 characters in length) |
| 10 | FOW3 | 10 | Feature of Work (used up to 30 characters in length) |

## 3.5 SUBMISSION REQUIREMENTS

Submit the following items for the Preliminary Schedule, Initial Schedule, and every Periodic Schedule Update throughout the life of the project:

### 3.5.1 Data CD's

Provide two sets of data CD's containing the project schedule in the backup format. Each CD shall also contain all previous update backup files. File medium shall be CD. Label each CD indicating the type of schedule (Preliminary, Initial, Update), full contract number, Data Date and file name. Each schedule shall have a unique file name as determined by the Contractor.

### 3.5.2 Narrative Report

Provide a Narrative Report with the Preliminary, Initial, and each Periodic Update of the project schedule, as the basis of the progress payment request. The Narrative Report shall include: a description of activities

along the 2 most critical paths where the total float is less than or equal to 20 work days, a description of current and anticipated problem areas or delaying factors and their impact, and an explanation of corrective actions

taken or required to be taken. The narrative report is expected to communicate to the Government, the Contractor's thorough analysis of the schedule output and its plans to compensate for any problems, either current or potential, which are revealed through that analysis. Identify and explain why any activities that, based their calculated late dates, should have either started or finished during the update period but did not.

3.5.3 Approved Changes Verification

Include only those project schedule changes in the schedule submission that have been previously approved by the Contracting Officer. The Narrative Report shall specifically reference, on an activity by activity basis, all changes made since the previous period and relate each change to documented, approved schedule changes.

3.5.4 Schedule Reports

The format, filtering, organizing and sorting for each schedule report shall be as directed by the Contracting Officer. Typically reports shall contain: Activity Numbers, Activity Description, Original Duration, Remaining Duration, Early Start Date, Early Finish Date, Late Start Date, Late Finish Date, Total Float, Actual Start Date, Actual Finish Date, and Percent Complete. The following lists typical reports that will be requested. One or all of these reports may be requested for each schedule submission.

3.5.4.1 Activity Report

A list of all activities sorted according to activity number.

3.5.4.2 Logic Report

A list of detailed predecessor and successor activities for every activity in ascending order by activity number.

3.5.4.3 Total Float Report

A list of all incomplete activities sorted in ascending order of total float. List activities which have the same amount of total float in ascending order of Early Start Dates. Do not show completed activities on this report.

3.5.4.4 Earnings Report by CLIN

A compilation of the Contractor's Total Earnings on the project from the NTP to the data date. This report shall reflect the earnings of specific activities based on the agreements made in the schedule update meeting defined herein. Provided that the Contractor has furnished a complete schedule update, this report shall serve as the basis of determining progress payments. Group activities by CLIN item number and sort by activity number. This report shall: sum all activities coded to a particular CLIN and provide a CLIN item percent earned value; and complete and sum CLIN items to provide a total project percent complete. The printed report shall contain, for each activity: the Activity Number, Activity Description, Original Budgeted Amount, Total Quantity, Quantity to Date, Percent Complete (based on cost), and Earnings to Date.

3.5.5 Network Diagram

The network diagram is required for the Preliminary, Initial and Periodic Updates. The network diagram shall depict and display the order and interdependence of activities and the sequence in which the work is to be accomplished. The Contracting Officer will use, but is not limited to, the following conditions to review compliance with this paragraph:

3.5.5.1 Continuous Flow

Diagrams shall show a continuous flow from left to right with no arrows from right to left. Show the activity number, description, duration, and estimated earned value on the diagram.

3.5.5.2 Project Milestone Dates

Show dates on the diagram for start of project, any contract required interim completion dates, and contract completion dates.

3.5.5.3 Critical Path

Clearly show the critical path.

3.5.5.4 Banding

Organize activities as directed to assist in the understanding of the activity sequence. Typically, this flow will group activities by category of work, work area and/or responsibility.

3.5.5.5 S-Curves

Earnings curves showing projected early and late earnings and earnings to date.

3.6 PERIODIC SCHEDULE UPDATE MEETINGS

Conduct periodic schedule update meetings for the purposes of reviewing any Contractor-proposed out of sequence corrections, determining causes for delay, correcting logic, maintaining schedule accuracy and determining earned value. Meetings shall occur at least monthly within five days of the proposed schedule data date and after the Contractor has updated the schedule with Government concurrence respecting actual start dates, actual finish dates, remaining durations and percent complete for each activity it intend to status. Provide a computer with the scheduling software loaded and a projector during the meeting which allows all meeting participants to view the proposed schedule update during the meeting. The meeting and resultant approvable schedule update shall be a condition precedent to a formal submission of the update as described in SUBMISSION REQUIREMENTS and to the submission of an invoice for payment. The meeting will be a working interactive exchange which will allow the Government and the Contractor the opportunity to review the updated schedule on a real time and interactive basis. The Contractor's authorized scheduling representative will organize, sort, filter and schedule the update as requested by the Government. Each meeting will last no longer than 8 hours. A rough draft of the proposed activity logic corrections and narrative report shall be provided to the Government 48 hours in advance of the meeting. The Contractor's Project Manager and Authorized Scheduler shall attend the meeting with the Authorized Representative of the Contracting Officer.

3.6.1 Update Submission Following Progress Meeting

Submit a complete update of the project schedule containing all approved

progress, revisions, and adjustments, pursuant to paragraph SUBMISSION REQUIREMENTS not later than 4 working days after the periodic schedule update meeting, reflecting only those changes made during the previous update meeting.

3.6.2 Status of Activities

Update information, including Actual Start Dates (AS), Actual Finish Dates (AF), Remaining Durations (RD), and Percent Complete shall be subject to the approval of the Government prior to the meeting. As a minimum, address the following items on an activity by activity basis during each progress meeting.

3.6.2.1 Start and Finish Dates

Accurately show the status of the AS and/or AF dates for each activity currently in-progress or completed since the last update. The Government may allow an AF date to be assigned with the percent complete less than 100% to account for the value of work remaining but not restraining successor activities. Only assign AS dates when actual progress occurs on an activity.

3.6.2.2 Remaining Duration

Update the estimated RD for all incomplete activities independent of Percent Complete. Remaining Durations may exceed the activity OD or may exceed the activity's prior update RD if the Government considers the current OD or RD to be understated based on current progress, insufficient work crews actually manning the job, unrealistic OD or deficiencies that must be corrected that restrain successor activities.

3.6.2.3 Percent Complete

Update the percent complete for each activity started, based on the realistic assessment of earned value. Activities which are complete but for remaining minor punch list work and which do not restrain the initiation of successor activities may be declared 100 percent complete. To allow for proper schedule management, cost load the correction of punch list from Government pre-final inspection activity(ies) not less than 1 percent of the total contract value, which activity(ies) may be declared 100 percent complete upon completion and correction of all punch list work identified during Government pre-final inspection(s).

3.6.2.4 Logic Changes

Specifically identify and discuss all logic changes pertaining to NTP on change orders, change orders to be incorporated into the schedule, Contractor proposed changes in work sequence, corrections to schedule logic for out-of-sequence progress, and other changes that have been made pursuant to contract provisions. The Government will only approve logic revisions for the purpose of keeping the schedule valid in terms of its usefulness in calculating a realistic completion date, correcting erroneous logic ties, and accurately sequencing the work.

3.6.2.5 Other Changes

Other changes required due to delays in completion of any activity or group of activities include: 1) delays beyond the Contractor's control, such as strikes and unusual weather. 2) delays encountered due to submittals, Government Activities, deliveries or work stoppages which make re-planning the work necessary. 3) Changes required to correct a schedule that does not represent the actual or planned prosecution and progress of the work.

3.7 REQUESTS FOR TIME EXTENSIONS

In the event the Contractor believes it is entitled to an extension of the contract performance period, completion date, or any interim milestone date, furnish the following for a determination by the Contracting Officer: justification, project schedule data, and supporting evidence as the Contracting Officer may deem necessary. Submission of proof of excusable delay, based on revised activity logic, duration, and costs (updated to the specific date that the delay occurred) is a condition precedent to any approvals by the Government. In response to each Request For Proposal issued by the Government, the Contractor shall submit a schedule impact analysis demonstrating whether or not the change contemplated by the Government impacts the critical path.

3.7.1 Justification of Delay

The project schedule shall clearly display that the Contractor has used, in full, all the float time available for the work involved with this request. The Contracting Officer's determination as to the number of allowable days of contract extension shall be based upon the project schedule updates in effect for the time period in question, and other factual information. Actual delays that are found to be caused by the Contractor's own actions, which result in a calculated schedule delay, will not be a cause for an extension to the performance period, completion date, or any interim milestone date.

3.7.2 Submission Requirements

Submit a justification for each request for a change in the contract completion date of less than 2 weeks based upon the most recent schedule update at the time of the NTP or constructive direction issued for the change. Such a request shall be in accordance with the requirements of other appropriate Contract Clauses and shall include, as a minimum:

a. A list of affected activities, with their associated project schedule activity number.

b. A brief explanation of the causes of the change.

c. An analysis of the overall impact of the changes proposed.

d. A sub-network of the affected area.

Identify activities impacted in each justification for change by a unique activity code contained in the required data file.

3.7.3 Additional Submission Requirements

The Contracting Officer may request an interim update with revised activities for any requested time extension of over 2 weeks. Provide this

disk within 4 days of the Contracting Officer's request.

## 3.8 DIRECTED CHANGES

If the NTP is issued for changes prior to settlement of price and/or time, submit proposed schedule revisions to the Contracting Officer within 2 weeks of the NTP being issued. The Contracting Officer will approve proposed revisions to the schedule prior to inclusion of those changes within the project schedule. If the Contractor fails to submit the proposed revisions, the Contracting Officer may furnish the Contractor with suggested revisions to the project schedule. The Contractor shall include these revisions in the project schedule until revisions are submitted, and final changes and impacts have been negotiated. If the Contractor has any objections to the revisions furnished by the Contracting Officer, advise the Contracting Officer within 2 weeks of receipt of the revisions. Regardless of the objections, the Contractor shall continue to update the schedule with the Contracting Officer's revisions until a mutual agreement in the revisions is reached. If the Contractor fails to submit alternative revisions within 2 weeks of receipt of the Contracting Officer's proposed revisions, the Contractor will be deemed to have concurred with the Contracting Officer's proposed revisions. The proposed revisions will then be the basis for an equitable adjustment for performance of the work.

## 3.9 WEEKLY PROGRESS MEETINGS

a. The Government and the Contractor shall meet weekly (or as otherwise mutually agreed to) between the meetings described in paragraph PERIODIC SCHEDULE UPDATE MEETINGS for the purpose of jointly reviewing the actual progress of the project as compared to the as planned progress and to review planned activities for the upcoming two weeks. The then current and approved schedule update shall be used for the purposes of this meeting and for the production and review of reports. The Contractor's Project Manager and the Authorized Representative of the Contracting Officer shall attend. The weekly progress meeting will address the status of RFI's, RFP's and Submittals.

b. Provide a bar chart produced by the scheduling software, organized by Total Float and Sorted by Early Start Date, and a two week "look-ahead" schedule by filtering all schedule activities to show only current ongoing activities and activities schedule to start during the upcoming two weeks, organized by Work Area Code (AREA) and sorted by Early Start Date.

c. The Government and the Contractor shall jointly review the reports. If it appears that activities on the longest path(s) which are currently driving the calculated completion date (driving activities), are not progressing satisfactorily and therefore could jeopardize timely project completion, corrective action must be taken immediately. Corrective action includes but is not limited to: increasing the number of work crews; increasing the number of work shifts; increasing the number of hours worked per shift; and determining if Government responsibility coded activities require Government corrective action.

## 3.10 OWNERSHIP OF FLOAT

Float available in the schedule, at any time, shall not be considered for the exclusive use of either the Government or the Contractor.

## 3.11 TRANSFER OF SCHEDULE DATA INTO RMS/QCS

The Contractor shall download and upload the schedule data into the Resident Management System (RMS) prior to RMS databases being transferred to the Government and is considered to be additional supporting data in a form and detail required by the Contracting Officer pursuant to FAR 52.232-5 - Payments under Fixed-Price Construction Contracts. The receipt of a proper payment request pursuant to FAR 52.232-27 - Prompt Payment for Construction Contracts is contingent upon the Government receiving both acceptable and approvable hard copies and electronic export from QCS of the application for progress payment.

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SECTION 01 33 00

SUBMITTAL PROCEDURES



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SECTION 01 33 00

SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 SUBMITTAL IDENTIFICATION (SD)

Submittals required are identified by SD numbers and titles as follows:

SD-01 Preconstruction Submittals

Certificates of insurance.
Surety bonds.
List of proposed subcontractors.
List of proposed products.
Construction Progress Schedule.
Submittal Register.
Schedule of values.
Health and safety plan.
Work plan.
Quality control plan.
Environmental protection plan.

SD-06 Test Reports

Report signed by authorized official of testing laboratory that a material, product or system identical to the material, product or system to be provided has been tested in accord with specified requirements. (Testing must have been within three years of date of contract award for the project.)

Report which includes findings of a test required to be performed by the Contractor on an actual portion of the work or prototype prepared for the project before shipment to job site.

Report which includes finding of a test made at the job site or on sample taken from the job site, on portion of work during or after installation.

Investigation reports

Daily checklists

Final acceptance test and operational test procedure

SD-07 Certificates

Statements signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements. Must be dated after award of project contract and clearly name the project.

Document required of Contractor, or of a supplier, installer or subcontractor through Contractor, the purpose of which is to further the quality of orderly progression of a portion of the work by

documenting procedures, acceptability of methods or personnel qualifications.

Confined space entry permits.

1.2 SUBMITTAL CLASSIFICATION

Submittals are classified as follows:

1.2.1 Government Approved

Government approval is required for extensions of design, critical materials, deviations, equipment whose compatibility with the entire system must be checked, and other items as designated by the Contracting Officer. Within the terms of the Contract Clause entitled [11]Specifications and Drawings for Construction,[11] they are considered to be [11]shop drawings.[11]

1.2.2 Information Only

All submittals not requiring Government approval will be for information only. They are not considered to be 11shop drawings11 within the terms of the Contract Clause referred to above.

1.3 APPROVED SUBMITTALS

The Contracting Officer's approval of submittals shall not be construed as a complete check, but will indicate only that the general method of construction, materials, detailing and other information are satisfactory. Approval will not relieve the Contractor of the responsibility for any error which may exist, as the Contractor under the Contractor Quality Control (CQC) requirements of this contract is responsible for dimensions, the design of adequate connections and details, and the satisfactory construction of all work. After submittals have been approved by the Contracting Officer, no re-submittal for the purpose of substituting materials or equipment will be considered unless accompanied by an explanation of why a substitution is necessary.

1.4 DISAPPROVED SUBMITTALS

The Contractor shall make all corrections required by the Contracting Officer and promptly furnish a corrected submittal in the form and number of copies specified for the initial submittal. If the Contractor considers any correction indicated on the submittals to constitute a change to the contract, a notice in accordance with the Contract Clause 11Changes11 shall be given promptly to the Contracting Officer.

1.5 WITHHOLDING OF PAYMENT

Payment for materials incorporated in the work will not be made if required approvals have not been obtained.

1.6 GENERAL

The Contractor shall make submittals as required by the specifications. The Contracting Officer may request submittals in addition to those specified when deemed necessary to adequately describe the work covered in the respective sections. Units of weights and measures used on all submittals shall be the same as those used in the contract drawings. Each submittal

shall be complete and in sufficient detail to allow ready determination of compliance with contract requirements. Prior to submittal, all items shall be checked and approved by the Contractor's Quality Control (CQC) System Manager and each item shall be stamped, signed, and dated by the CQC System Manager indicating action taken. Proposed deviations from the contract requirements shall be clearly identified. Submittals shall include items such as: Contractor's, manufacturer's, or fabricator's drawings; descriptive literature including (but not limited to) catalog cuts, diagrams, operating charts or curves; test reports; test cylinders; samples; O&M manuals (including parts list); certifications; warranties; and other such required submittals. Submittals requiring Government approval shall be scheduled and made prior to the acquisition of the material or equipment covered thereby. Samples remaining upon completion of the work shall be picked up and disposed of in accordance with manufacturer's Material Safety Data Sheets (MSDS) and in compliance with existing laws and regulations.

## 1.7 SUBMITTAL REGISTER

At the end of this section is a submittal register list showing items of equipment and materials for which submittals are required by the specifications; this list may not be all inclusive and additional submittals may be required. The Contractor shall maintain a submittal register for the project in accordance with SECTION 01 45 04.00 10 CONTRACTOR QUALITY CONTROL.The Government will provide the initial submittal register in electronic format. Thereafter, the Contractor shall maintain a complete list of all submittals, including completion of all data columns. Dates on which submittals are received and returned by the Government will be included in its export file to the Contractor. The Contractor shall track all submittals.

## 1.8 SCHEDULING

Submittals covering component items forming a system or items that are interrelated shall be scheduled to be coordinated and submitted concurrently. Certifications to be submitted with the pertinent drawings shall be so scheduled. Adequate time (a minimum of 30 calendar days exclusive of mailing time) shall be allowed and shown on the register for review and approval. No delay damages or time extensions will be allowed for time lost in late submittals.

## 1.9 TRANSMITTAL FORM (ENG FORM 4025)

The sample transmittal form (ENG Form 4025) attached to this section shall be used for submitting both Government approved and information only submittals in accordance with the instructions on the reverse side of the form. These forms are included in the QCS software that the Contractor is required to use for this contract. This form shall be properly completed by filling out all the heading blank spaces and identifying each item submitted. Special care shall be exercised to ensure proper listing of the specification paragraph and/or sheet number of the contract drawings pertinent to the data submitted for each item.

## 1.10 SUBMITTAL PROCEDURES

Submittals shall be made as follows:

1.10.1 Procedures

a. Government approved and information only submittals shall be listed on separate 4025's.

b. Sample for testing shall be delivered with SECTION 01 45 04.00 10 CONTRACTOR QUALITY CONTROL. All other submittals shall be delivered to the contracting officer.

1.10.2 Deviations

For submittals which include proposed deviations requested by the Contractor, the column "variation" of ENG Form 4025 shall be checked. The Contractor shall set forth in writing the reason for any deviations and annotate such deviations on the submittal. The Government reserves the right to rescind inadvertent approval of submittals containing unnoted deviations.

1.11 CONTROL OF SUBMITTALS

The Contractor shall carefully control his procurement operations to ensure that each individual submittal is made on or before the Contractor scheduled submittal date shown on the approved "Submittal Register."

1.12 GOVERNMENT APPROVED SUBMITTALS

Upon completion of review of submittals requiring Government approval, the submittals will be identified as having received approval by being so stamped and dated. Four copies of the submittal will be retained by the Contracting Officer and one copy of the submittal will be returned to the Contractor.

1.13 INFORMATION ONLY SUBMITTALS

Normally submittals for information only will not be returned. Approval of the Contracting Officer is not required on information only submittals. The Government reserves the right to require the Contractor to resubmit any item found not to comply with the contract. This does not relieve the Contractor from the obligation to furnish material conforming to the plans and specifications; will not prevent the Contracting Officer from requiring removal and replacement of nonconforming material incorporated in the work; and does not relieve the Contractor of the requirement to furnish samples for testing by the Government laboratory or for check testing by the Government in those instances where the technical specifications so prescribe.

1.14 STAMPS

Stamps used by the Contractor on the submittal data to certify that the submittal meets contract requirements is to be similar to the following:

| CONTRACTOR |
| --- |
| (Firm Name) |
| _____ Approved |
| _____ Approved with corrections as noted on submittal data and/or attached sheets(s) |
| SIGNATURE: _____ |
| TITLE: _____ |
| DATE: _____ |

1.15 ATTACHMENT

Submittal Register
Eng Form 4025-R

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

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SECTION 01 35 29

# SAFETY AND OCCUPATIONAL HEALTH REQUIREMENTS

## PART 1 GENERAL

### 1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

| | |
|---|---|
| ANSI Z359.1 | (1992; R 1999) Safety Requirements for Personal Fall Arrest Systems, Subsystems and Components |

ASME INTERNATIONAL (ASME)

| | |
|---|---|
| ASME B30.22 | (2005) Articulating Boom Cranes |
| ASME B30.5 | (2004) Mobile and Locomotive Cranes |

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

| | |
|---|---|
| NFPA 241 | (2004) Safeguarding Construction, Alteration, and Demolition Operations |
| NFPA 51B | (2003) Fire Prevention During Welding, Cutting, and Other Hot Work |
| NFPA 70 | (2005) National Electrical Code |

U.S. ARMY CORPS OF ENGINEERS (USACE)

| | |
|---|---|
| EM 385-1-1 | (2003) Safety -- Safety and Health Requirements |

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

| | |
|---|---|
| 29 CFR 1919 | Gear Certification |
| 29 CFR 1926 | Safety and Health Regulations for Construction |
| 29 CFR 1926.500 | Fall Protection |

### 1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only or as otherwise designated. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section

01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Accident Prevention Plan (APP); G

Activity Hazard Analysis (AHA);

Crane Critical Lift Plan; G

Crane Work Plan; G

Proof of qualification for Crane Operators; G

SD-06 Test Reports

Reports

Submit reports as their incidence occurs, in accordance with the requirements of the paragraph entitled, "Reports."

Accident Reports

Monthly Exposure Reports

Crane Reports

Regulatory Citations and Violations

SD-07 Certificates

Third Party Certification of Barge-Mounted Mobile Cranes

Certificate of Compliance (Crane)

Submit one copy of each permit attached to each Daily Quality Control Report.

1.3 DEFINITIONS

a. Associate Safety Professional (ASP). An individual who is currently certified as an ASP by the Board of Certified Safety Professionals.

b. Certified Construction Health & Safety Technician (CHST). An individual who is currently certified as a CHST by the Board of Certified Safety Professionals.

c. Certified Industrial Hygienist (CIH). An individual who is currently certified as a CIH by the American Board of Industrial Hygiene.

d. Certified Safety Professional (CSP). An individual who is currently certified as a CSP by the Board of Certified Safety Professionals.

e. Certified Safety Trained Supervisor (STS). An individual who is currently certified as an STS by the Board of Certified Safety Professionals.

f. Competent Person for Fall Protection. A person who is capable of identifying hazardous or dangerous conditions in the personal fall arrest system or any component thereof, as well as their application and use with related equipment, and has the authority to take prompt corrective measures to eliminate the hazards of falling.

g. High Visibility Accident. Any mishap which may generate publicity and/or high visibility.

h. Low-slope roof. A roof having a slope less than or equal to 4 in 12 (vertical to horizontal).

i. Medical Treatment. Treatment administered by a physician or by registered professional personnel under the standing orders of a physician. Medical treatment does not include first aid treatment even through provided by a physician or registered personnel.

j. Multi-Employer Work Site (MEWS). A multi-employer work site, as defined by OSHA, is one in which many employers occupy the same site. The Government considers the Prime Contractor to be the "controlling authority" for all work site safety and health of the subcontractors.

k. Operating Envelope. The area surrounding any crane. Inside this "envelope" is the crane, the operator, riggers, rigging gear between the hook and the load, the load and the crane's supporting structure (ground, rail, etc.).

1. Qualified Person for Fall Protection. A person with a recognized degree or professional certificate, extensive knowledge, training and experience in the field of fall protection who is capable of performing design, analysis, and evaluation of fall protection systems and equipment.

m. Recordable Injuries or Illnesses. Any work-related injury or illness that results in:

(1) Death, regardless of the time between the injury and death, or the length of the illness;

(2) Days away from work;

(3) Restricted work;

(4) Transfer to another job;

(5) Medical treatment beyond first aid;

(6) Loss of consciousness; or

(7) A significant injury or illness diagnosed by a physician or other licensed health care professional, even **if** it did not result in (1) through (6) above.

n. Site Safety and Health Officer (SSHO). The superintendent or other qualified or competent person who is responsible for the on-site safety and health required for the project. The Contractor quality control (QC) person can be the SSHO on this project.

o. "USACE" property and equipment specified in USACE EM 385-1-1 should

be interpreted as Government property and equipment.

p. Weight Handling Equipment (WHE) Accident. A WHE accident occurs when any one or more of the six elements in the operating envelope fails to perform correctly during operation, including operation during maintenance or testing resulting in personnel injury or death; material or equipment damage; dropped load; derailment; two-blocking; overload; and collision, including unplanned contact between the load, crane, and/or other objects. A dropped load, derailment, two-blocking, overload and collision are considered accidents even though no material damage or injury occurs. A component failure (e.g., motor burnout, gear tooth failure, bearing failure) is not considered an accident solely due to material or equipment damage unless the component failure results in damage to other components (e.g., dropped boom, dropped load, roll over, etc.).

## 1.4 REGULATORY REQUIREMENTS

In addition to the detailed requirements included in the provisions of this contract, work performed shall comply with USACE EM 385-1-1, and all applicable federal, state, and local laws, ordinances, criteria, rules and regulations. Submit matters of interpretation of standards to the appropriate administrative agency for resolution before starting work. Where the requirements of this specification, applicable laws, criteria, ordinances, regulations, and referenced documents vary, the most stringent requirements shall apply.

## 1.5 1.5 DRUG PREVENTION PROGRAM

Conduct a proactive drug and alcohol use prevention program for all workers, prime and subcontractor, on the site. Ensure that no employee uses illegal drugs or consumes alcohol during work hours. Ensure there are no employees under the influence of drugs or alcohol during work hours. After accidents, collect blood, urine, or saliva specimens and test the injured and involved employees for the influence of drugs and alcohol. A copy of the test shall be made available to the Contracting Officer upon request.

## 1.6 SITE QUALIFICATIONS, DUTIES AND MEETINGS

### 1.6.1 Personnel Qualifications

#### 1.6.1.1 Site Safety and Health Officer (SSHO)

Site Safety and Health Officer (SSHO) shall be provided at the work site at all times to perform safety and occupational health management, surveillance, inspections, and safety enforcement for the Contractor. The SSHO shall meet the following requirements:

Level 3:

A minimum of 5 years safety work on similar projects.
30-hour OSHA construction safety class or equivalent within the last 5 years.
An average of at least 24 hours of formal safety training each year for the past 5 years.
Competent person training as needed.

1.6.1.2 Crane Operators

Crane operators shall meet the requirements in USACE EM 385-1-1, Section 16 and Appendix G. In addition, for mobile cranes with Original Equipment Manufacturer (OEM) rated capacitates of 50,000 pounds or greater, crane operators shall be designated as qualified by a source that qualifies crane operators (i.e., union, a government agency, or and organization that tests and qualifies crane operators). Proof of current qualification shall be provided.

1.6.2 Personnel Duties

1.6.2.1 Site Safety and Health Officer (SSHO)/Superintendent

a. Conduct daily safety and health inspections and maintain a written log which includes area/operation inspected, date of inspection, identified hazards, recommended corrective actions, estimated and actual dates of corrections. Safety inspection logs shall be attached to the Contractor's daily quality control report.

b. Conduct mishap investigations and complete required reports. Maintain the OSHA Form 300 and Daily Production reports for prime and sub-contractors.

c. Maintain applicable safety reference material on the job site.

d. Attend the pre-construction conference, pre-work meetings including preparatory inspection meeting, and periodic in-progress meetings.

e. Implement and enforce accepted APPS and AHAs.

f. Maintain a safety and health deficiency tracking system that monitors outstanding deficiencies until resolution. A list of unresolved safety and health deficiencies shall be posted on the safety bulletin board.

g. Ensure sub-contractor compliance with safety and health requirements.
Failure to perform the above duties will result in dismissal of the superintendent and/or SSHO, and a project work stoppage. The project work
stoppage will remain in effect pending approval of a suitable replacement.

1.6.2.2 SSHO Duties

a. Perform safety and occupational health management, surveillance, inspections, and safety enforcement for the project.

b. Perform as the safety and occupational health "competent person" as defined by USACE EM 385-1-1.

c. Be on-site whenever work or testing is being performed.

d. Conduct and document safety inspections.

1.6.3 Meetings

1.6.3.1 Preconstruction Conference

a. The Contractor will be informed, in writing, of the date of the preconstruction conference. The purpose of the preconstruction conference is for the Contractor and the Contracting Officer's representatives to become acquainted and explain the functions and operating procedures of their respective organizations and to reach mutual understanding relative to the administration of the overall project's Accident Prevention Plan (APP) before the initiation of work.

b. Contractor representatives who have a responsibility or significant role in accident prevention on the project shall attend the preconstruction conference. This includes the project superintendent, site safety and health officer, quality control supervisor, or any other assigned safety and health professionals who participated in the development of the APP (including the Activity Hazard Analyses (AHAs) and special plans, program and procedures associated with it).

c. The Contractor shall discuss the details of the submitted APP to include incorporated plans, programs, procedures and a listing of anticipated AHAs that will be developed and implemented during the performance of the contract. This list of proposed AHAs will be reviewed at the conference and an agreement will be reached between the Contractor and the Contracting Officer's representative as to which phases will require an analysis. In addition, a schedule for the preparation, submittal, review, and acceptance of AHAs shall be established to preclude project delays.

d. Deficiencies in the submitted APP will be brought to the attention of the Contractor at the preconstruction conference, and the Contractor shall revise the plan to correct deficiencies and re-submit it for acceptance. Work shall not begin until there is an accepted APP.

1.6.3.2 Weekly Safety Meetings

Conduct weekly safety meetings at the project site for all employees. The Contracting Officer will be informed of the meeting"in advance and be allowed attendance. Minutes showing contract title, signatures of attendees and a list of topics discussed shall be attached to the Contractors' daily quality control report

1.6.3.3 1.6.3.3 Work Phase Meetings

The appropriate AHA shall be reviewed and attendance documented by the Contractor at the preparatory, initial, and follow-up phases of quality control inspection. The analysis should be used during daily inspections to ensure the implementation and effectiveness of safety and health controls.

1.7 1.7 TRAINING

1.7.1 1.7.1 New Employee Indoctrination

New employees (prime and sub-contractor) will be informed of specific site hazards before they begin work. Documentation of this orientation shall be kept on file at the project site.

1.7.2 1.7.2 Periodic Training

Provide Safety and Health Training in accordance with USACE EM 385-1-1 and the accepted APP. Ensure all required training has been accomplished for

all onsite employees.

1.7.3 1.7.3 Training on Activity Hazard Analysis (AHA)

Prior to beginning a new phase, training will be provided to all affected employees to include a review of the AHA to be implemented.

1.8 ACCIDENT PREVENTION PLAN (APP)

The Contractor shall use a qualified person to prepare the written site-specific APP. Prepare the APP in accordance with the format and requirements of USACE EM 385-1-1 and as supplemented herein. Cover all paragraph and subparagraph elements in USACE EM 385-1-1, Appendix A, "Minimum Basic Outline for Preparation of Accident Prevention Plan". Where a paragraph or subparagraph element is not applicable to the work to be performed indicate "Not Applicable" next to the heading. Specific requirements for some of the APP elements are described below at paragraph 1.8.1. The APP shall be job-specific and shall address any unusual or unique aspects of the project or activity for which it is written. The APP shall interface with the Contractor's overall safety and health program. Any portions of the Contractor's overall safety and health program referenced in the APP shall be included in the applicable APP element and made site-specific. The Government considers the Prime Contractor to be the "controlling authority" for all work site safety and health of the subcontractors. Contractors are responsible for informing their subcontractors of the safety provisions under the terms of the contract and the penalties for noncompliance, coordinating the work to prevent one craft from interfering with or creating hazardous working conditions for other crafts, and inspecting subcontractor operations to ensure that accident prevention responsibilities are being carried out. The APP shall be signed by the person and firm (senior person) preparing the APP, the Contractor, the on-site superintendent, the designated site safety and health officer and any designated CSP and/or CIH.

Submit the APP to the Contracting Officer 15 calendar days prior to the date of the preconstruction conference for acceptance. Work cannot proceed without an accepted APP. The Contracting Officer reviews and comments on the Contractor's submitted APP and accepts it when it meets the requirements of the contract provisions.

Once accepted by the Contracting Officer, the APP and attachments will be enforced as part of the contract. Disregarding the provisions of this contract or the accepted APP will be cause for stopping of work, at the discretion of the Contracting Officer, until the matter has been rectified.

Once work begins, changes to the accepted APP shall be made with the knowledge and concurrence of the Contracting Officer, project superintendent, SSHO and quality control manager. Should any unforeseen hazard become evident during the performance of work, the project superintendent shall inform the Contracting Officer, both verbally and in writing, for resolution as soon as possible. In the interim, all necessary action shall be taken by the Contractor to restore and maintain safe working conditions in order to safeguard onsite personnel, visitors, the public, and the environment. Copies of the accepted plan will be maintained at the Resident Engineer's office and at the job site. The APP shall be continuously reviewed and amended, as necessary, throughout the life of the contract. Unusual or high-hazard activities not identified in the original APP shall be incorporated in the plan as they are discovered.

1.8.1 EM 385-1-1 Contents

In addition to the requirements outlined in Appendix A of USACE EM 385-1-1,

the following is required:

a. Names and qualifications (resumes including education, training, experience and certifications) of all site safety and health personnel designated to perform work on this project to include the designated site safety and health officer and other competent and qualified personnel to be used such as CSPs, CIHs, STSs, CHSTs. The duties of each position shall be specified.

b. Qualifications of competent and of qualified persons. As a minimum, competent persons shall be designated and qualifications submitted for each of the following major areas: excavation; scaffolding; fall protection; hazardous energy; confined space; health hazard recognition, evaluation and control of chemical, physical and biological agents; personal protective equipment and clothing to include selection, use and maintenance.

c. Health Hazard Control Program. The Contractor shall designate a competent and qualified person to establish and oversee a Health Hazard Control Program in accordance with USACE EM 385-1-1, Section 6. The program shall ensure that employees, on-site Government representatives, and others, are not adversely exposed to chemical, physical and biological agents and that necessary controls and protective actions are instituted to ensure health.

d. Crane Critical Lift Plan. Prepare and sign weight handling critical lift plans for lifts over 75 percent of the capacity of the crane or hoist (or lifts over 50 percent of the capacity of a barge mounted mobile crane's hoists) at any radius of lift; lifts involving more than one crane or hoist; lifts of personnel; and lifts involving non-routine rigging or operation, sensitive equipment, or unusual safety risks. The plan shall be submitted 15 calendar days prior to on-site work and include the requirements of USACE EM 385-1-1, paragraph 16.C.18. and the following:

(1) For lifts of personnel, the plan shall demonstrate compliance with the requirements of 29 CFR 1926.550(g).

(2) For barge mounted mobile cranes, barge stability calculations identifying barge list and trim based on anticipated loading; and load charts based on calculated list and trim. The amount of list and trim shall be within the crane manufacturer's requirements.

e. Alcohol and Drug Abuse Plan

(1) Describe plan for random checks and testing with pre-employment screening in accordance with the DFAR Clause subpart 252.223-7004, "Drug Free Work Force."

(2) Description of the on-site prevention program

f. Fall Protection and Prevention (FP&P) Plan. The plan shall be site specific and address all fall hazards in the work place and during different phases of construction. It shall address how to protect and prevent workers from falling to lower levels when they are exposed to fall hazards above 1.8 m (6 feet). A qualified person for fall protection shall prepare and sign the plan. The plan shall include fall protection and prevention systems, equipment and methods employed for every phase of work, responsibilities, assisted rescue, self-rescue and evacuation procedures, training requirements, and monitoring methods. Fall Protection and Prevention Plan shall be revised every

six months for lengthy projects, reflecting any changes during the course of construction due to changes in personnel, equipment, systems or work habits. The accepted Fall Protection and Prevention Plan shall be kept and maintained at the job site for the duration of the project. The Fall Protection and Prevention Plan shall be included in the Accident Prevention Plan (APP).

g. Training Records and Requirements. List of mandatory training and certifications which are applicable to this project (e.g. explosive actuated tools, confined space entry, fall protection, crane operation, vehicle operator, forklift operators, personal protective equipment); list of requirements for periodic retraining/certification; outline requirements for supervisory and employee safety meetings.

h. Crane Work Plan. The Contractor shall provide a crane work plan to the Contracting Officer for acceptance. The crane work plan shall include the specific model of each crane and a drawing identifying their locations (exact), the dimensions, wheel sizes, number of wheels, wheel spacing, tire pressure(s), number of axles, axle spacing, minimum wheel load to be exerted during operations and maximum outrigger load to be exerted during operations. The Contractor shall allow at least 10 working days for acceptance/non-acceptance of the crane work plan. No crane operations shall begin prior to written acceptance of the crane work plan by the Government. Resident Engineer shall be the government approving authority.

1.9 ACTIVITY HAZARD ANALYSIS (AHA)

The Activity Hazard Analysis (AHA) format shall be in accordance with USACE EM 385-1-1. Submit the AHA for review at least 15 calendar days prior to the start of each phase. Format subsequent AHA as amendments to the APP. An AHA will be developed by the Contractor for every operation involving a type of work presenting hazards not experienced in previous project operations or where a new work crew or subcontractor is to perform work. The analysis must identify and evaluate hazards and outline the proposed methods and techniques for the safe completion of each phase of work. At a minimum, define activity being performed, sequence of work, specific safety and health hazards anticipated, control measures (to include personal protective equipment) to eliminate or reduce each hazard to acceptable levels, equipment to be used, inspection requirements, training requirements for all involved, and the competent person in charge of that phase of work. For work with fall hazards, including fall hazards associated with scaffold erection and removal, identify the appropriate fall protection methods used. For work with materials handling equipment, address safeguarding measures related to materials handling equipment. For work requiring excavations, include requirements for safeguarding excavations. An activity requiring an AHA shall not proceed until the ABA has been accepted by the Contracting Officer's representative and a meeting has been conducted by the Contractor to discuss its contents with everyone engaged in the activity, including on-site Government representatives. The Contractor shall document meeting attendance at the preparatory, initial, and follow-up phases of quality control inspection. The AHA shall be continuously reviewed and, when appropriate, modified to address changing site conditions or operations. The analysis should be used during daily inspections to ensure the implementation and effectiveness of the activity's safety and health controls.

The AHA list will be reviewed periodically (at least monthly) at the Contractor supervisory safety meeting and updated as necessary when procedures, scheduling, or hazards change.

Activity hazard analyses shall be updated as necessary to provide an

effective response to changing work conditions and activities. The on-site superintendent, site safety and health officer and competent persons used to develop the AHAs, including updates, shall sign and date the AHAs before they are implemented.

The activity hazard analyses shall be developed using the project schedule as the basis for the activities performed. Any activities listed on the project schedule will require an AHA. The AHAs will be developed by the contractor, supplier or subcontractor and provided to the prime contractor for submittal to the Contracting Officer.

1.10 DISPLAY OF SAFETY INFORMATION

Within 1 calendar day after commencement of work, erect a safety bulletin board at the job site. The following information shall be displayed on the safety bulletin board in clear view of the on-site construction personnel, maintained current, and protected against the elements and unauthorized removal:

a. Map denoting the route to the nearest emergency care facility.

b. Emergency phone numbers.

c. Copy of the most up-to-date APP.

d. Current AHA(s).

e. OSHA 300A Form.

f. OSHA Safety and Health Protection-On-The-Job Poster.

g. Hot work permit.

1.11 SITE SAFETY REFERENCE MATERIALS

Maintain safety-related references applicable to the project, including those listed in the article "References." Maintain applicable equipment manufacturer's manuals

1.12 EMERGENCY MEDICAL TREATMENT

Contractors shall arrange for their own emergency medical treatment. Government has no responsibility to provide emergency medical treatment.

1.13 REPORTS

1.13.1 Accident Reports

a. For recordable injuries and illnesses, and property damage accidents resulting in at least $2,000 in damages, the Prime Contractor shall conduct an accident investigation to establish the root cause(s) of the accident, complete the USACE Accident Report Form 3394 and provide the report to the Contracting Officer within 1 calendar day of the accident. The Contracting Officer will provide copies of any required or special forms.

b. For any weight handling equipment accident (including rigging gear accidents) the Prime Contractor shall conduct an accident investigation to establish the root cause(s) of the accident, complete the WHE Accident Report (Crane and Rigging Gear) form and provide the report to the Contracting Officer within 30 calendar days of the accident. Crane operations shall not proceed until cause is determined and corrective actions have been implemented to the satisfaction of the contracting officer. The Contracting Officer

will provide a blank copy of the accident report form.

1.13.2 Accident Notification

Notify the Contracting Officer as soon as practical, but not later than four hours, after any accident meeting the definition of Recordable Injuries or Illnesses or High Visibility Accidents, property damage equal to or greater than $2,000, or any weight handling equipment accident. Information shall include contractor name; contract title; type of contract; name of activity, installation or location where accident occurred; date and time of accident; names of personnel injured; extent of property damage, if any; extent of injury, if known, and brief description of accident (to include type of construction equipment used, PPE used, etc.). Preserve the conditions and evidence on the accident site until the Government investigation team arrives on-site and Government investigation is conducted.

1.13.3 Monthly Exposure Reports

Monthly exposure reporting to the Contracting Officer is required to be attached to the monthly billing request. This report is a compilation of employee-hours worked each month for all site workers, both prime and subcontractor. The Contracting Officer will provide copies of any special forms.

1.13.4 Regulatory Citations and Violations

Contact the Contracting Officer immediately of any OSHA or other regulatory agency inspection or visit, and provide the Contracting Officer with a copy of each citation, report, and contractor response. Correct violations and citations promptly and provide written corrective actions to the Contracting Officer.

1.13.5 Crane Reports

Submit crane inspection reports required in accordance with USACE EM 385-1-1, Appendix H and as specified herein with Daily Reports of Inspections.

1.13.6 Certificate of Compliance

The Contractor shall provide a Certificate of Compliance for each crane entering an activity under this contract (see Contracting Officer for a blank certificate). Certificate shall state that the crane and rigging gear meet applicable OSHA regulations (with the Contractor citing which OSHA regulations are applicable, e.g., cranes used in construction, demolition, or maintenance shall comply with 29 CFR 1926 and USACE EM 385-1-1 section 16 and Appendix H. Certify on the Certificate of Compliance that the crane operator(s) is qualified and trained in the operation of the crane to be used. The Contractor shall also certify that all of its crane operators working on the DOD activity have been trained in the proper use of all safety devices (e.g., anti-two block devices). These certifications shall be posted on the crane.

1.13.7 Third Party Certification of Barge-Mounted Mobile Cranes

Barge-mounted mobile cranes shall be certified in accordance with 29 CFR 1919 by an OSHA accredited person.

1.14 HOT WORK

All "Hot Work" shall conform to Port of Anchorage requirements. The Contractor will provide at least two (2) twenty (20) pound 4A:20 BC rated

extinguishers for normal "Hot Work". All extinguishers shall be current inspection tagged, approved safety pin and tamper resistant seal. It is also mandatory to have a designated FIRE WATCH for any "Hot Work" done at this activity. The Fire Watch shall be trained in accordance with NFPA 51B and remain on-site for a minimum of 30 minutes after completion of the task or as specified on the hot work permit.

a. Oil painting materials (paint, brushes, empty paint cans, etc.), and all flammable liquids shall be removed from the facility at quitting time. All painting materials and flammable liquids shall be stored outside in a suitable metal locker or box and will require re-submittal with non-hazardous materials.

b. Accumulation of trays, paper, shavings, sawdust, boxes and other packing materials shall be removed from the facility at the close of each workday and such material disposed of in the proper containers located away from the facility.

c. The storage of combustible supplies shall be a safe distance from structures.

d. Area outside the facility undergoing work shall be cleaned of trash, paper, or other discarded combustibles at the close of each workday.

e. All portable electric devices (saws, sanders, compressors, extension chord, lights, etc.) shall be disconnected at the close of each workday. When possible, the main electric switch in the facility shall be deactivated.

f. When starting work in the facility, Contractors shall require their personnel to familiarize themselves with the location of the nearest fire alarm boxes and place in memory the emergency City Fire Department phone number.

## PART 2 PRODUCTS

### 2.1 FALL PROTECTION ANCHORAGE

Fall protection anchorage, conforming to ANSI 2359.1, installed under the supervision of a qualified person in fall protection, shall be left in place for continued customer use and so identified by signage stating the capacity of the anchorage (strength and number of persons who may be tied-off to it at any one time).

## PART 3 EXECUTION

### 3.1 CONSTRUCTION AND/OR OTHER WORK

The Contractor shall comply with USACE EM 385-1-1, NFPA 241, the APP, the AHA, Federal and/or State OSHA regulations, and other related submittals and activity fire and safety regulations. The most stringent standard shall prevail.

#### 3.1.1 Hazardous Material Use

Each hazardous material must receive approval prior to being brought onto the job site prior to any other use in connection with this contract. Allow a minimum of 10 working days for processing of the request for use of a hazardous material. Any work or storage involving hazardous chemicals or materials must be done in a manner that will not expose Government or Contractor employees to any unsafe or unhealthful conditions. Adequate

protective measures must be taken to prevent Government or Contractor employees from being exposed to any hazardous condition that could result from the work or storage. The Prime Contractor shall keep a complete inventory of hazardous materials brought onto the work-site. Approval by the Contracting Officer of protective measures and storage area is required prior to the start of the work.

3.1.2 Hazardous Material Exclusions

Notwithstanding any other hazardous material used in this contract, radioactive materials or instruments capable of producing ionizing/non-ionizing radiation (with the exception of radioactive material and devices used in accordance with USACE EM 385-1-1 such as nuclear density meters for compaction testing and laboratory equipment with radioactive sources) as well as materials which contain asbestos, mercury or polychlorinated biphenyls, di-isocynates and lead-based paint are prohibited. The Contracting Officer, upon written request by the Contractor, may consider exceptions to the use of any of the above excluded materials.

3.1.3 Unforeseen Hazardous Material

The design should have identified materials such as PCB, lead paint, and friable and non-friable asbestos. If material not indicated, that may be hazardous to human health upon disturbance during construction operations is encountered, stop that portion of work and notify the Contracting Officer immediately. Within 14 calendar days the Government will determine if the material is hazardous. If material is not hazardous or poses no danger, the Government will direct the Contractor to proceed without change. If material is hazardous and handling of the material is necessary to accomplish the work, the Government will issue a modification pursuant to "FAR 52.243-4, Changes" and "FAR 52.236-2, Differing Site Conditions."

3.2 PRE-OUTAGE COORDINATION MEETING

Contractors are required to apply for utility outages at least 15 days in advance. As a minimum, the request should include the location of the outage, utilities being affected, duration of outage and any necessary sketches. Special requirements for electrical outage requests are contained elsewhere in this specification section. Once approved, and prior to beginning work on the utility system requiring shut down, the Contractor shall attend a pre-outage coordination meeting with the Contracting Officer and the City Utilities Department to review the scope of work and the lock-out/tag-out procedures for worker protection. No work will be performed on energized electrical circuits unless proof is provided that no other means exist.

3.3 FALL HAZARD PROTECTION AND PREVENTION PROGRAM

The Contractor shall establish a fall protection and prevention program, for the protection of all employees exposed to fall hazards. The program shall include company policy, identify responsibilities, education and training requirements, fall hazard identification, prevention and control measures, inspection, storage, care and maintenance of fall protection equipment and rescue and escape procedures.

3.3.1 Training

The Contractor shall institute a fall protection training program. As part of the Fall Hazard Protection and Prevention Program, the Contractor shall provide training for each employee who might be exposed to fall

hazards. A competent person for fall protection shall provide the training. Training
requirements shall be in accordance with USACE EM 385-1-1, section 1.A.16.

3.3.2 Fall Protection Equipment

The Contractor shall enforce use of the fall protection equipment designated for each specific work activity in the Fall Protection and Prevention Plan and/or AHA at all times when an employee is on a surface 1.8 m (6 feet) or more above lower levels. Fall protection systems such as guardrails, personnel fall arrest system, safety nets, etc., are required when working within 1.8m (6 feet) of any leading edge. In addition to the required fall protection systems, safety skiff, personal floatation devices, life rings etc., are required when working above or next to water in accordance with USACE EM 385-1-1, paragraphs 05.I. and 05.H. Personal fall arrest systems are required when working from an articulating or extendible boom, swing stages, or suspended platform. In addition, personal fall arrest systems are required when operating other equipment such as scissor lifts if the work platform is capable of being positioned outside the wheelbase. The need for tying-off in such equipment is to prevent ejection of the employee from the equipment during raising, lowering, or travel. Fall protection must comply with 29 CFR 1926.500, Subpart M, USACE EM 385-1-1.

3.3.2.1 Personal Fall Arrest Equipment

Personal fall arrest equipment, systems, subsystems, and components shall meet ANSI Z359.1. Only a full-body harness with a shock-absorbing lanyard or self-retracting lanyard is an acceptable personal fall arrest device. Body belts may only be used as a positioning device system (for uses such as steel reinforcing assembly and in addition to an approved fall arrest system). Harnesses shall have a fall arrest attachment affixed to the body support (usually a Dorsal D-ring) and specifically designated for attachment to the rest of the system. Only locking snap hooks and carabiners shall be used. Webbing, straps, and ropes shall be made of synthetic fiber. The maximum free fall distance when using fall arrest equipment shall not exceed 1.8 m (6 feet). The total fall distance and any swinging of the worker (pendulum-like motion) that can occur during a fall shall always be taken into consideration when attaching a person to a fall arrest system.

3.3.3 Fall Protection for Roofing Work

Fall protection controls shall be implemented based on the type of roof being demolished and work being performed. The roof area to be accessed shall be evaluated for its structural integrity including weight-bearing capabilities for the projected loading.

a. Low Sloped Roofs:

((1) For work within 1.8 m (6 feet) of an edge, on low-slope roofs, personnel shall be protected from falling by use of personal fall arrest systems, guardrails, or safety nets.

(2) For work greater than 1.8 m (6 feet) from an edge, warning lines shall be erected and installed in accordance with 29 CFR 1926.500 and USACE EM 385-1-1.

3.3.4 3.3.4 Safety Nets

If safety nets are used as the selected fall protection system on the project, they shall be provided at unguarded work places, leading edge work

or when working over water, machinery, dangerous operations or other surfaces where the use of ladders, scaffolds, catch platforms, temporary floors, fall arrest systems or restraint/positioning systems are impractical. Safety nets shall be tested immediately after installation with a drop test of 181.4 kg (400 pounds) dropped from the same elevation a person might fall, and every six months thereafter.

3.3.5 Existing Anchorage

Existing anchorages, to be used for attachment of personal fall arrest equipment, shall be certified (or re-certified) by a qualified person for fall protection in accordance with ANSI 2359.1. Exiting horizontal lifeline anchorages shall be certified (or re-certified) by a registered professional engineer with experience in designing horizontal lifeline systems.

3.3.6 Horizontal Lifelines

Horizontal lifelines shall be designed, installed, certified and used under the supervision of a qualified person for fall protection as part of a complete fall arrest system which maintains a safety factor of 2 29 CFR 1926.500).

3.3.7 Guardrail Systems

Guardrails shall consist of top and mid-rails, post and toe boards. The top edge height of standard railing must be 42 inches plus or minus 3 inches above the walking/working level. When mid-rails are used, they must be installed at a height midway between the top edge of the guardrail system and the walking/working level. Posts shall be placed no more than 8 feet apart(29 CFR 1926 and EM 385-1-1).

3.3.8 Rescue and Evacuation Procedures

When personal fall arrest systems are used, the contractor must ensure that the mishap victim can self-rescue or can be rescued promptly should a fall occur. A Rescue and Evacuation Plan shall be prepared by the contractor and include a detailed discussion of the following: methods of rescue; methods of self-rescue; equipment used; training requirement; specialized training for the rescuers; procedures for requesting rescue and medical assistance; and transportation routes to a medical facility. The Rescue and Evacuation Plan shall be included in the Activity Hazard Analysis (AHA) for the phase of work, in the Fall Protection and Prevention (FP&P) Plan, and the Accident Prevention Plan (APP).

3.4 SCAFFOLDING

Employees shall be provided with a safe means of access to the work area on the scaffold. Climbing of any scaffold braces or supports not specifically designed for access is prohibited. Access to scaffold platforms greater than 6 m (20 feet) in height shall be accessed by use of a scaffold stair system. Vertical ladders commonly provided by scaffold system manufacturers shall not be used for accessing scaffold platforms greater than 6 m (20 feet) in height. The use of an adequate gate is required. Contractor shall ensure that employees are qualified to perform scaffold erection and dismantling. Do not use scaffold without the capability of supporting at least four times the maximum intended load or without appropriate fall protection as delineated in the accepted fall protection and prevention plan. Stationary scaffolds must be attached to structural building components to safeguard against tipping forward or backward. Special care shall be given to ensure scaffold systems are not overloaded. Side brackets used to extend scaffold platforms on self-supported scaffold systems for

the storage of material is prohibited. The first tie-in shall be at the height equal to 4 times the width of the smallest dimension of the scaffold base. Work platforms shall be placed on mud sills. Scaffold or work platform erectors sha 1 have fall protection during the erection and dismantling of scaffolding or work platforms that are more than **six** feet. Delineate fall protection requirements when working above six feet or above dangerous operations in the Fall Protection and Prevention (FP&P) Plan and Activity Hazard Analysis (AHA) for the phase of work.

3.4.1 Stilts

The use of stilts for gaining additional height in construction, renovation, repair or maintenance work is prohibited.

3.5 EQUIPMENT

3.5.1 Material Handling Equipment

a. Material handling equipment such as forklifts shall not be modified with work platform attachments for supporting employees unless specifically delineated in the manufacturer's printed operating instructions.

b. The use of hooks on equipment for lifting of material must be in accordance with manufacturer's printed instructions.

c. Operators of forklifts or power industrial trucks shall be licensed in accordance with OSHA.

3.5.2 Weight Handling Equipment

a. Cranes must be equipped with:

(1) Load indicating devices (LIDs) and a boom angle or radius indicator or load moment indicating devices (LMIs).
(2) Anti-two block prevention devices.

(3) Boom hoist hydraulic relief valve, disconnect, or shutoff (stops hoist when boom reaches a predetermined hugh angle).

(4) Boom length indicator (for telescoping booms).

(5) Device to prevent uncontrolled lowering of a telescoping hydraulic boom.

(6) Device to prevent uncontrolled retraction of a telescoping hydraulic boom.

(7) Wind indicating device.

(8) Drum rotation indicator.

(9) Barge mounted mobile cranes shall be equipped with a load indicating device, a wind indicating device and a marine type list and trim indicator readable in one-half degree increments.

b. The Contractor shall notify the Contracting Officer 15 days in advance of any cranes entering the activity so that necessary quality assurance spot checks can be coordinated. Contractor's operator shall remain with the crane during the spot check.

c. The Contractor shall comply with the crane manufacturer's specifications and limitations for erection and operation of cranes and

hoists used in support of the work. Erection shall be performed under the supervision of a designated person (as defined in ASME B30.5). All testing shall be performed in accordance with the manufacturer's recommended procedures.

d. TThe Contractor shall comply with ASME B30.5 for mobile cranes, ASME B30.22 for articulating boom cranes, and ASME B30.8 for floating cranes and floating derricks.

e. The presence of Government personnel does not relieve the Contractor of an obligation to comply with all applicable safety regulations. The Government will investigate all complaints of unsafe or unhealthful working conditions received in writing from Contractor employees, federal civilian employees, or military officers.

f. Each load shall be rigged/attached independently to the hook/master-link in such a fashion that the load cannot slide or otherwise become detached. Christmas-tree lifting (multiple rigged materials) is not allowed.

g. Under no circumstances shall a Contractor make a lift at or above 90% of the cranes rated capacity in any configuration.

h. When operating in the vicinity of overhead transmission lines, operators and riggers shall be alert to this special hazard and shall follow the requirements of USACE EM 385-1-1 section 11 and ASME B30.5 or ASME B30.22 as applicable.

i. Crane suspended personnel work platforms (baskets) shall not be used unless the Contractor proves that using any other access to the work location would provide a greater hazard to the workers or is impossible. Personnel shall not be lifted with a line hoist or friction crane.

j. A fire extinguisher having a minimum rating of 10BC and a minimum nominal capacity of 51b of extinguishing agent shall be available at all operator stations or crane cabs. Portable fire extinguishers shall be inspected, maintained, and recharged as specified in NFPA 10, Standard for Portable Fire Extinguishers.

k. All employees shall be kept clear of loads about to be lifted and of suspended loads.

1. A weight handling equipment operator shall not leave his position at the controls while a load is suspended.

m. The Contractor shall use cribbing when performing lifts on outriggers.

n. The crane hook/block must be positioned directly over the load. Side loading of the crane is prohibited.

o. A physical barricade must be positioned to prevent personnel from entering the counterweight swing (tail swing) area of the crane.

p. A substantial and durable rating chart containing legible letters and figures shall be provided with each crane and securely mounted onto the crane cab in a location allowing easy reading by the operator while seated in the control station.

q. Certification records which include the date of inspection, signature of the person performing the inspection, and the serial

number or other identifier of the crane that was inspected shall always be available for review by Contracting Officer personnel.

r. Written reports listing the load test procedures used along with any repairs or alterations performed on the crane shall be available for review by Contracting Officer personnel.

s. The Contractor shall certify that all crane operators have been trained in proper use of all safety devices (e.g. anti-two block devices).

3.5.3 Equipment and Mechanized Equipment

a. Equipment shall be operated by designated qualified operators. Proof of qualifications shall be kept on the project site for review.

b. Manufacture specifications or owner's manual for the equipment shall be on-site and reviewed for additional safety precautions or requirements that are sometimes not identified by OSHA or USACE EM 385-1-1. Such additional safety precautions or requirements shall be incorporated into the AHAs.

c. Equipment and mechanized equipment shall be inspected in accordance with manufacturer's recommendations for safe operation by a competent person prior to being placed into use.

d. Daily checks or tests shall be conducted and documented on equipment and mechanized equipment by designated competent persons.

3.6 EXCAVATIONS

The competent person for excavations performed as a result of contract work shall be on-site when excavation work is being performed, and shall inspect, and document the excavations daily prior to entry by workers. The competent person must evaluate all hazards, including atmospheric, that may be associated with the work, and shall have the resources necessary to correct hazards promptly. The competent person shall perform soil classification in accordance with 29 CFR 1926.

3.6.1 Utility Locations

Prior to digging, the appropriate digging permit must be obtained. All underground utilities in the work area must be positively identified by a private utility locating service in addition to any city locating service and coordinated with the city utility department. Any markings made during the utility investigation must be maintained throughout the contract.

3.6.2 Utility Location Verification

The Contractor must physically verify underground utility locations by hand digging using wood or fiberglass handled tools when any adjacent construction work is expected to come within three feet of the underground system. Digging within 0.61 m (2 feet) of a known utility must not be performed by means of mechanical equipment; hand digging shall be used. If construction is parallel to an existing utility the utility shall be exposed by hand digging every 30.5 m (100 feet) if parallel within 1.5 m 5 feet) of the excavation.

3.6.3 3.6.3 Utilities with Concrete Slabs'

Utilities located within concrete slabs or pier decks, and the like are extremely difficult to identify. The location must be coordinated with city

utility department in addition to a private locating service. Outages on system utilities shall be used in circumstances where concrete chipping, saw cutting, or core drilling is required and utilities are unable to be completely identified.

3.6.4 Shoring Systems

Trench and shoring systems must be identified in the accepted safety plan and AHA. Manufacture tabulated data and specifications or registered engineer tabulated data for shoring or benching systems shall be readily available on-site for review. Job-made shoring or shielding shall have the registered professional engineer stamp, specifications, and tabulated data. Extreme care must be used when excavating near direct burial electric underground cables.

3.6.5 Trenching Machinery

Trenching machines with digging chain drives shall be operated only when the spotters/laborers are in plain view of the operator. Operator and spotters/laborers shall be provided training on the hazards of the digging chain drives with emphasis on the distance that needs to be maintained when the digging chain is operating. Documentation of the training shall be kept on file at the project site.

3.7 ELECTRICAL

3.7.1 Conduct of Electrical Work

Underground electrical spaces must be certified safe for entry before entering to conduct work. Cables that will be cut must be positively identified and de-energized prior to performing each cut. Positive cable identification must be made prior to submitting any outage request for electrical systems. Arrangements are to be coordinated with the Contracting Officer and Station Utilities for identification. The Contracting Officer will not accept an outage request until the Contractor satisfactorily documents that the circuits have been clearly identified. Perform all high voltage cable cutting remotely using hydraulic cutting tool. When racking in or live switching of circuit breakers, no additional person other than the switch operator will be allowed in the space during the actual operation. Plan so that work near energized parts is minimized to the fullest extent possible. Use of electrical outages clear of any energized electrical sources is the preferred method. When working in energized substations, only qualified electrical workers shall be permitted to enter. When work requires Contractor to work near energized circuits as defined by the NFPA 70, high voltage personnel must use personal protective equipment that includes, as a minimum, electrical hard hat, safety shoes, insulating gloves with leather protective sleeves, fire retarding shirts, coveralls, face shields, and safety glasses. In addition, provide electrical arc flash protection for personnel as required. Insulating blankets, hearing protection, and switching suits may also be required, depending on the specific job and as delineated in the Contractor's AHA.

3.7.2 Portable Extension Cords

Portable extension cords shall be sized in accordance with manufacturer ratings for the tool to be powered and protected from damage. All damaged extension cords shall be immediately removed from service. Portable extension cords shall meet the requirements of NFPA 70.

3.8 CRYSTALLINE SILICA

Grinding, abrasive blasting, and foundry operations of construction materials containing crystalline silica shall comply with OSHA regulations,

such as 29 CFR 1910.94, and USACE EM 385-1-1, Appendix C. The Contractor shall develop and implement effective exposure control and elimination procedures to include dust control systems, engineering controls, and establishment of work area boundaries, as well as medical surveillance, training, air monitoring, and personal protective equipment.

## 3.9 3.9 HOUSEKEEPING

### 3.9.1 3.9.1 Clean-Up

All debris in work areas shall be cleaned up daily or more frequently if necessary. Construction debris may be temporarily located in an approved location; however, garbage accumulation must be removed each day.

### 3.9.2 Falling Object Protection

All areas must be barricaded to safeguard employees. When working overhead, barricade the area below to prevent entry by unauthorized employees. Construction warning tape and signs shall be posted so they are clearly visible from all possible access points. When employees are working overhead all tools and equipment shall be secured so that they will not fall. When using guardrail as falling object protection, all openings shall be small enough to prevent passage of potential falling objects.

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SOURCES FOR REFERENCE PUBLICATIONS

SECTION 01 42 00

SOURCES FOR REFERENCE PUBLICATIONS

PART 1 GENERAL

1.1 REFERENCES

Various publications are referenced in other sections of the specifications to establish requirements for the work. These references are identified in each section by document number, date and title. The document number used in the citation is the number assigned by the standards producing organization, (e.g. ASTM B 564 Nickel Alloy Forgings). However, when the standards producing organization has not assigned a number to a document, an identifying number has been assigned for reference purposes.

1.2 ORDERING INFORMATION

The addresses of the standards publishing organizations whose documents are referenced in other sections of these specifications are listed below, and if the source of the publications is different from the address of the sponsoring organization, that information is also provided. Documents listed in the specifications with numbers which were not assigned by the standards producing organization should be ordered from the source by title rather than by number.

ASTM INTERNATIONAL (ASTM)
100 Barr Harbor Drive, P.O. Box C700
West Conshohocken, PA 19428-2959
Ph: 610-832-9500
Fax: 610-832-9555
E-mail: service@astm.org
Internet: http://www.astm.org

U.S. ARMY CORPS OF ENGINEERS (USACE)
Order CRD-C DOCUMENTS from:
U.S. Army Engineer Waterways Experiment Station
ATTN: Technical Report Distribution Section, Services Branch, TIC
3909 Halls Ferry Road
Vicksburg, MS 39180-6199
Ph: 601-634-2664
Fax: 601-634-2388
E-mail: mtc-info@erdc.usace.army.mil
Internet: http://www.wes.army.mil/SL/MTC/handbook.htm

Order Other Documents from:
USACE Publications Depot
Attn: CEHEC-IM-PD
2803 52nd Avenue
Hyattsville, MD 20781-1102
Ph: 301-394-0081
Fax: 301-394-0084
E-mail: pubs-army@usace.army.mil
Internet: http://www.usace.army.mil/publications

or http://www.hnd.usace.army.mil/techinfo/engpubs.htm

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)
8601 Adelphi Road
College Park, MD 20740-6001
Ph: 866-272-6272
Fax: 301-837-0483
Internet: http://www.archives.gov

Order documents from:
Superintendent of Documents
U.S.Government Printing Office (GPO)
732 North Capitol Street, NW
Washington, DC 20401
Ph: 202-512-1800
Fax: 202-512-2104
E-mail: contactcenter@gpo.gov
Internet: http://www.gpoaccess.gov

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USACE QUALITY CONTROL SYSTEM (QCS)

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SECTION 01 45 01.10

USACE QUALITY CONTROL SYSTEM (QCS)

PART 1 GENERAL

1.1 Contract Administration

The Government will use the Resident Management System for Windows (RMS) to assist in its monitoring and administration of this contract. The Contractor must use the Government-furnished Construction Contractor Module of RMS, referred to as QCS, to record, maintain, and submit various information throughout the contract period. The Contractor module, user manuals, updates, and training information can be downloaded from the RMS web site. This joint Government-Contractor use of RMS and QCS will facilitate electronic exchange of information and overall management of the contract. QCS provides the means for the Contractor to input, track, and electronically share information with the Government in the following areas:

Administration
Finances
Quality Control
Submittal Monitoring
Scheduling
Import/Export of Data

1.1.1 Correspondence and Electronic Communications

For ease and speed of communications, both Government and Contractor will, to the maximum extent feasible, exchange correspondence and other documents in electronic format. Correspondence, pay requests and other documents comprising the official contract record will also be provided in paper format, with signatures and dates where necessary. Paper documents will govern, in the event of discrepancy with the electronic version.

1.1.2 Other Factors

Particular attention is directed to Contract Clause, "Schedules for Construction Contracts", Contract Clause, "Payments", Section 01 32 01.00 10 PROJECT SCHEDULE, Section 01 33 00 SUBMITTAL PROCEDURES, and Section 01 45 0 4.00 29 CONTRACTOR QUALITY CONTROL, which have a direct relationship to the reporting to be accomplished through QCS. Also, there is no separate payment for establishing and maintaining the QCS database; all costs associated therewith will be included in the contract pricing for the work.

1.2 QCS SOFTWARE

QCS is a Windows-based program that can be run on a stand-alone personal computer or on a network. The Government will make available the QCS software to the Contractor after award of the construction contract. Prior to the Pre-Construction Conference, the Contractor will be responsible to download, install and use the latest version of the QCS software from the Government's RMS Internet Website. Upon specific justification and request by the Contractor, the Government can provide QCS on CD-ROM. Any program updates of QCS will be made available to the Contractor via the Government

RMS Website as they become available.

1.3 SYSTEM REQUIREMENTS

The following is the minimum system configuration that the Contractor must have to run QCS:

**QCS and QAS System**

**Hardware**

IBM-compatible PC with 1000 MHz Pentium or higher processor

256+ MB RAM for workstation / 512+ MB RAM for server

1 GB hard drive disk space for sole use by the QCS system

3-1/2 inch high-density floppy drive

Compact Disk (CD) Reader 8x speed or higher

SVGA or higher resolution monitor (1024x768, 256 colors)

Mouse or other pointing device

Windows compatible printer. (Laser printer must have 4 MB+ of RAM)

Connection to the Internet, minimum 56k BPS

**Software**

MS Windows 2000 or higher

QAS-Word Processing software: MS Word 2000 or newer

Latest version of: Netscape Navigator, Microsoft Internet Explorer, or other browser that supports HTML 4.0 or higher

Electronic mail (E-mail) MAPI compatible

Virus protection software that is regularly upgraded with all issued manufacturer's updates

1.4 RELATED INFORMATION

1.4.1 QCS User Guide

After contract award, download instructions for the installation and use of QCS from the Government RMS Internet Website. In case of justifiable difficulties, the Government will provide the Contractor with a CD-ROM containing these instructions.

1.4.2 Contractor Quality Control(CQC) Training

The use of QCS will be discussed with the Contractor's QC System Manager during the mandatory CQC Training class.

## 1.5 CONTRACT DATABASE

Prior to the pre-construction conference, the Government will provide the Contractor with basic contract award data to use for QCS. The Government will provide data updates to the Contractor as needed, generally by using the Government's SFTP repository built into QCS import/export function. These updates will generally consist of submittal reviews, correspondence status, QA comments, and other administrative and QA data.

## 1.6 DATABASE MAINTENANCE

Establish, maintain, and update data in the QCS database throughout the duration of the contract at the Contractor's site office. Submit data updates to the Government (e.g., daily reports, submittals, RFI's, schedule updates, payment requests, etc.) using the Government's SFTP repository built into QCS export function. If permitted by the Contracting Officer, e-mail or CD-ROM may be used instead of E-mail (see Paragraph DATA SUBMISSION VIA CD-ROM). The QCS database typically includes current data on the following items:

### 1.6.1 Administration

#### 1.6.1.1 Contractor Information

Contain within the database the Contractor's name, address, telephone numbers, management staff, and other required items. Within 14 calendar days of receipt of QCS software from the Government, deliver Contractor administrative data in electronic format.

#### 1.6.1.2 Subcontractor Information

Contain within the database the name, trade, address, phone numbers, and other required information for all subcontractors. A subcontractor must be listed separately for each trade to be performed. Assign each subcontractor/trade a unique Responsibility Code, provided in QCS. Within 14 calendar days of receipt of QCS software from the Government, deliver subcontractor administrative data in electronic format.

#### 1.6.1.3 Correspondence

Identify all Contractor correspondence to the Government with a serial number. Prefix correspondence initiated by the Contractor's site office with "S". Prefix letters initiated by the Contractor's home (main) office with "H". Letters must be numbered starting from 0001. (e.g., H-0001 or S-0001). The Government's letters to the Contractor will be prefixed with "C".

#### 1.6.1.4 Equipment

Contain within the Contractor's QCS database a current list of equipment planned for use or being used on the jobsite, including the most recent and planned equipment inspection dates.

#### 1.6.1.5 Management Reporting

QCS includes a number of reports that Contractor management can use to track the status of the project. The value of these reports is reflective of the quality of the data input, and is maintained in the various sections of QCS. Among these reports are: Progress Payment Request worksheet,

QA/QC comments, Submittal Register Status, Three-Phase Inspection checklists.

1.6.1.6 Request For Information (RFI)

Exchange all Requests For Information (RFI) using the Built-in RFI generator and tracker in QCS.

1.6.2 Finances

1.6.2.1 Pay Activity Data

Include within the QCS database a list of pay activities that the Contractor must develop in conjunction with the construction schedule. The sum of all pay activities must be equal to the total contract amount, including modifications. Group pay activities Contract Line Item Number (CLIN); the sum of the activities must equal the amount of each CLIN. The total of all CLINs equals the Contract Amount.

1.6.2.2 Payment Requests

Prepare all progress payment requests using QCS. Complete the payment request worksheet, prompt payment certification, and payment invoice in QCS. Update the work completed under the contract, measured as percent or as specific quantities, at least monthly. After the update, generate a payment request report using QCS. Submit the payment request, prompt payment certification, and payment invoice with supporting data using the Government's SFTP repository built into QCS export function. If permitted by the Contracting Officer, e-mail or a CD-ROM may be used. A signed paper copy of the approved payment request is also required, which will govern in the event of discrepancy with the electronic version.

1.6.3 Quality Control (QC)

QCS provides a means to track implementation of the 3-phase QC Control System, prepare daily reports, identify and track deficiencies, document progress of work, and support other Contractor QC requirements. Maintain this data on a daily basis. Entered data will automatically output to the QCS generated daily report. Provide the Government a Contractor Quality Control (CQC) Plan within the time required in Section 01 45 04.00 29 CONTRACTOR QUALITY CONTROL. Within seven calendar days of Government acceptance, submit a QCS update reflecting the information contained in the accepted CQC Plan: schedule, pay activities, features of work, submittal register, QC requirements, and equipment list.

1.6.3.1 Daily Contractor Quality Control (CQC) Reports.

QCS includes the means to produce the Daily CQC Report. The Contractor may use other formats to record basic QC data. However, the Daily CQC Report generated by QCS must be the Contractor's official report. Summarize data from any supplemental reports by the Contractor and consolidate onto the QCS-generated Daily CQC Report. Submit daily CQC Reports as required by Section 01 45 04.00 29 CONTRACTOR QUALITY CONTROL. Electronically submit reports to the Government within 24 hours after the date covered by the report. Also provide the Government a signed, printed copy of the daily CQC report.

1.6.3.2 Deficiency Tracking.

Use QCS to track deficiencies. Deficiencies identified by the Contractor will be numerically tracked using QC punch list items. Maintain a current log of its QC punch list items in the QCS database. The Government will log the deficiencies it has identified using its QA punch list items. The Government's QA punch list items will be included in its export file to the Contractor. Regularly update the correction status of both QC and QA punch list items.

1.6.3.3 QC Requirements

Develop and maintain a complete list of QC testing and required structural and life safety special inspections required by the International Code Council (ICC), transferred and installed property, and user training requirements in QCS. Update all data on these QC requirements as work progresses, and promptly provide this information to the Government via QCS.

1.6.3.4 Three-Phase Control Meetings

Maintain scheduled and actual dates and times of preparatory and initial control meetings in QCS.

1.6.3.5 Labor and Equipment Hours

Log labor and equipment exposure hours on a daily basis. This data will be rolled up into a monthly exposure report.

1.6.3.6 Accident/Safety Reporting

The Government will issue safety comments, directions, or guidance whenever safety deficiencies are observed. The Government's safety comments will be included in its export file to the Contractor. Regularly update the correction status of the safety comments. In addition, utilize QCS to advise the Government of any accidents occurring on the jobsite. This brief supplemental entry is not to be considered as a substitute for completion of mandatory reports, e.g., ENG Form 3394 and OSHA Form 300.

1.6.3.7 Features of Work

Include a complete list of the features of work in the QCS database. A feature of work may be associated with multiple pay activities. However, each pay activity (see subparagraph "Pay Activity Data" of paragraph "Finances") will only be linked to a single feature of work.

1.6.3.8 Hazard Analysis

Use QCS to develop a hazard analysis for each feature of work included in the CQC Plan. Address any hazards, or potential hazards, that may be associated with the work.

1.6.4 Submittal Management

The Government will provide the initial submittal register in electronic format. Thereafter, maintain a complete list of all submittals, including completion of all data columns. Dates on which submittals are received and returned by the Government will be included in its export file to the Contractor. Use QCS to track and transmit all submittals. ENG Form 4025, submittal transmittal form, and the submittal register update must be

produced using QCS. QCS and RMS will be used to update, store and exchange submittal registers and transmittals, but will not be used for storage of actual submittals.

1.6.5 Schedule

Develop a construction schedule consisting of pay activities, in accordance with Section 01 32 01.00 10 PROJECT SCHEDULE. Input and maintain in the QCS database this schedule either manually or by using the Standard Data Exchange Format (SDEF) (see Section 01 32 01.00 10 PROJECT SCHEDULE). Include with each pay request the updated schedule.

1.6.6 Import/Export of Data

QCS includes the ability to export Contractor data to the Government and to import submittal register and other Government-provided data from RMS, and schedule data using SDEF.

1.7 IMPLEMENTATION

Contractor use of QCS as described in the preceding paragraphs is mandatory. Ensure that sufficient resources are available to maintain its QCS database, and to provide the Government with regular database updates. QCS shall be an integral part of the Contractor's management of quality control.

1.8 DATA SUBMISSION VIA CD-ROM

The Government-preferred method for Contractor's submission of QCS data is by using the Government's SFTP repository built into QCS export function. Other data should be submitted using E-mail with file attachment(s). For locations where this is not feasible, the Contracting Officer may permit use of CD-ROM for data transfer. Export data onto CDs using the QCS built-in export function. If used, submit CD-ROMs in accordance with the following:

1.8.1 File Medium

Submit in English required data on CD-ROM conforming to industry standards used in the United States.

1.8.2 CD-ROM Labels

Affix a permanent exterior label to each CD-ROM submitted. Indicate on the label in English, the QCS file name, full contract number, contract name, project location, data date, name and telephone number of person responsible for the data.

1.8.3 File Names

The files will be automatically named by the QCS software. The naming convention established by the QCS software must not be altered.

1.9 MONTHLY COORDINATION MEETING

Update the QCS database each workday. At least monthly, generate and submit an export file to the Government with schedule update and progress payment request. As required in Contract Clause "Payments", at least one week prior to submittal, meet with the Government representative to review

the planned progress payment data submission for errors and omissions.

Make all required corrections prior to Government acceptance of the export file and progress payment request. Payment requests accompanied by incomplete or incorrect data submittals will be returned. The Government will not process progress payments until an acceptable QCS export file is received.

1.10 NOTIFICATION OF NONCOMPLIANCE

The Contracting Officer will notify the Contractor of any detected noncompliance with the requirements of this specification. Take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the work site, will be deemed sufficient for the purpose of notification.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

-- End of Section --

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CONTRACTOR QUALITY CONTROL



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SECTION 01 45 04.00 29

CONTRACTOR QUALITY CONTROL

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM INTERNATIONAL (ASTM)

| | |
|---|---|
| ASTM D 3740 | (2004a) Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction |
| | ASTM E 329(2007) Standard Specification for Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction |

U.S. ARMY CORPS OF ENGINEERS (USACE)

| | |
|---|---|
| ER 1110-1-12 | (1994) Quality Management |

1.2 PAYMENT

Separate payment will not be made for providing and maintaining an effective Quality Control program, and all costs associated therewith shall be included in the applicable unit prices or lump-sum prices contained in the Bidding Schedule.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 GENERAL REQUIREMENTS

The Contractor is responsible for quality control and shall establish and maintain an effective quality control system in compliance with the Contract Clause titled "Inspection of Construction." The quality control system shall consist of plans, procedures, and organization necessary to produce an end product which complies with the contract requirements. The system shall cover all design and construction operations, both onsite and offsite, and shall be keyed to the proposed design and construction sequence. The site project superintendent will be held responsible for the quality of work on the job and is subject to removal by the Contracting Officer for non-compliance with the quality requirements specified in the contract. The site project superintendent in this context shall be the highest level manager responsible for the overall construction activities at the site, including quality and production. The site project superintendent shall maintain a physical presence at the site at all times, except as otherwise acceptable to the Contracting Officer, and shall be

responsible for all construction and construction related activities at the site.

## 3.2 QUALITY CONTROL PLAN

The Contractor shall furnish for review by the Government, not later than 30 days after receipt of notice to proceed, the Contractor Quality Control (CQC) Plan proposed to implement the requirements of the Contract Clause titled "Inspection of Construction." The plan shall identify personnel, procedures, control, instructions, tests, records, and forms to be used. The Government will consider an interim plan for the first 30 days of operation. Design and construction will be permitted to begin only after acceptance of the CQC Plan or acceptance of an interim plan applicable to the particular feature of work to be started. Work outside of the features of work included in an accepted interim plan will not be permitted to begin until acceptance of a CQC Plan or another interim plan containing the additional features of work to be started. Where the applicable Code issued by the International Code Council calls for an inspection by the Building Official, the Contractor shall include the inspections in the Quality Control Plan and shall perform the inspections. The designer of Record shall develop a program for any special inspections required by the applicable International Codes and the Contractor shall perform these inspections, using qualified inspectors.

### 3.2.1 Content of the CQC Plan

The CQC Plan shall include, as a minimum, the following to cover all design and construction operations, both onsite and offsite, including work by subcontractors, fabricators, suppliers, and purchasing agents subcontractors, designers of record, consultants, architect/engineers (AE), fabricators, suppliers, and purchasing agents:

a. A description of the quality control organization, including a chart showing lines of authority and acknowledgment that the CQC staff shall implement the three phase control system for all aspects of the work specified. The staff shall include a CQC System Manager who shall report to the project superintendent.

b. The name, qualifications (in resume format), duties, responsibilities, and authorities of each person assigned a CQC function.

c. A copy of the letter to the CQC System Manager signed by an authorized official of the firm which describes the responsibilities and delegates sufficient authorities to adequately perform the functions of the CQC System Manager, including authority to stop work which is not in compliance with the contract. The CQC System Manager shall issue letters of direction to all other various quality control representatives outlining duties, authorities, and responsibilities. Copies of these letters shall also be furnished to the Government.

d. Procedures for scheduling, reviewing, certifying, and managing submittals, including those of subcontractors, offsite fabricators, suppliers, and purchasing agents subcontractors, designers of record, consultants, architect engineers (AE), offsite fabricators, suppliers, and purchasing agents. These procedures shall be in accordance with Section 01 33 00 SUBMITTAL PROCEDURES.

e. Control, verification, and acceptance testing procedures for each specific test to include the test name, specification paragraph requiring test, feature of work to be tested, test frequency, and

person responsible for each test. (Laboratory facilities approved by the Contracting Officer shall be used.)

f. Procedures for tracking preparatory, initial, and follow-up control phases and control, verification, and acceptance tests including documentation.

g. Procedures for tracking design and construction deficiencies from identification through acceptable corrective action. These procedures shall establish verification that identified deficiencies have been corrected.

h. Reporting procedures, including proposed reporting formats.

i. A list of the definable features of work. A definable feature of work is a task which is separate and distinct from other tasks, has separate control requirements, and may be identified by different trades or disciplines, or it may be work by the same trade in a different environment. Although each section of the specifications may generally be considered as a definable feature of work, there are frequently more than one definable features under a particular section. This list will be agreed upon during the coordination meeting.

3.2.3 Acceptance of Plan

Acceptance of the Contractor's plan is required prior to the start of construction. Acceptance is conditional and will be predicated on satisfactory performance during the construction. The Government reserves the right to require the Contractor to make changes in his CQC Plan and operations including removal of personnel, as necessary, to obtain the quality specified.

3.2.4 Notification of Changes

After acceptance of the CQC Plan, the Contractor shall notify the Contracting Officer in writing of any proposed change. Proposed changes are subject to acceptance by the Contracting Officer.

3.3 COORDINATION MEETING

After the Postaward Conference, before start of design or construction, and prior to acceptance by the Government of the CQC Plan, the Contractor shall meet with the Contracting Officer or Authorized Representative and discuss the Contractor's quality control system. The CQC Plan shall be submitted for review a minimum of 7 calendar days prior to the Coordination Meeting. During the meeting, a mutual understanding of the system details shall be developed, including the forms for recording the CQC operations, design activities, control activities, testing, administration of the system for both onsite and offsite work, and the interrelationship of Contractor's Management and control with the Government's Quality Assurance. Minutes of the meeting shall be prepared by the Government and signed by both the Contractor and the Contracting Officer. The minutes shall become a part of the contract file. There may be occasions when subsequent conferences will be called by either party to reconfirm mutual understandings and/or address deficiencies in the CQC system or procedures which may require corrective action by the Contractor.

3.4 QUALITY CONTROL ORGANIZATION

3.4.1 Personnel Requirements

The requirements for the CQC organization are a CQC System Manager, a Design Quality Manager, and sufficient number of additional qualified personnel to ensure safety and contract compliance. The Safety and Health Manager shall serve as a member of the CQC staff. The CQC System Manager, if qualified and if allowed by Section 00 73 00 may serve as the Safety and Health Manager or may be a separate position. Personnel identified in the technical provisions as requiring specialized skills to assure the required work is being performed properly will also be included as part of the CQC organization. The Contractor's CQC staff shall maintain a presence at the site at all times during progress of the work and have complete authority and responsibility to take any action necessary to ensure contract compliance. The CQC staff shall be subject to acceptance by the Contracting Officer. The Contractor shall provide adequate office space, filing systems and other resources as necessary to maintain an effective and fully functional CQC organization. Complete records of all letters, material submittals, shop drawing submittals, schedules and all other project documentation shall be promptly furnished to the CQC organization by the Contractor. The CQC organization shall be responsible to maintain these documents and records at the site at all times, except as otherwise acceptable to the Contracting Officer.

3.4.2 CQC System Manager

The Contractor shall identify as CQC System Manager an individual within the onsite work organization who shall be responsible for overall management of CQC and have the authority to act in all CQC matters for the Contractor. The CQC System Manager shall be a graduate engineer, graduate architect, or a graduate of construction management. The CQC system Manager may alternately be an engineering technician with at least 2 years of college and an ICC certification as a Commercial Building Inspector (Residential Building Inspector certification will be required for Military Family housing projects). In addition, the CQC system manager shall have a minimum of 5 years construction experience on construction similar to this contract. The CQC System Manager shall be on the site at all times during construction and shall be employed by the prime Contractor. The CQC System Manager shall be assigned no other duties (except may also serve as Safety and Health Manager, if qualified and if allowed by Section 00 73 00). An alternate for the CQC System Manager shall be identified in the plan to serve in the event of the System Manager's absence. The requirements for the alternate shall be the same as for the designated CQC System Manager.

3.4.3 CQC Personnel

In addition to CQC personnel specified elsewhere in the contract, the Contractor shall provide as part of the CQC organization specialized personnel to assist the CQC System Manager for the following area: civil.

This individuals may be an employees of the prime or subcontractor; be responsible to the CQC System Manager; is not intended to be full time, but must be physically present at the construction site during work on his areas of responsibility, have the necessary education and/or experience in accordance with the experience matrix listed herein. This individuals may perform other duties but must be allowed sufficient time to perform his assigned quality control duties as described in the Quality Control Plan.

Experience Matrix

| | Area | Qualifications |
|---|---|---|
| a. | Civil | Graduate Civil Engineer or |

Construction Manager with 4 years experience in the type of work being performed on this project or technician with 5 yrs related experience

3.4.4 Additional Requirement

In addition to the above experience and/or education requirements the CQC System Manager shall have completed the course entitled "Construction Quality Management For Contractors". This course is periodically offered at Fairbanks.

3.4.5 Organizational Changes

The Contractor shall maintain the CQC staff at full strength at all times. When it is necessary to make changes to the CQC staff, the Contractor shall revise the CQC Plan to reflect the changes and submit the changes to the Contracting Officer for acceptance.

3.5 SUBMITTALS AND DELIVERABLES

Submittals, if needed, shall be made as specified in Section 01 33 00 SUBMITTAL PROCEDURES. The CQC organization shall be responsible for certifying that all submittals and deliverables are in compliance with the contract requirements.

3.6 CONTROL

Contractor Quality Control is the means by which the Contractor ensures that the construction, to include that of subcontractors and suppliers, complies with the requirements of the contract. At least three phases of control shall be conducted by the CQC System Manager for each definable feature of the construction work as follows:

3.6.1 Preparatory Phase

This phase shall be performed prior to beginning work on each definable feature of work, after all required plans/documents/materials are approved/accepted, and after copies are at the work site. This phase shall include:

a. A review of each paragraph of applicable specifications, reference codes, and standards. A copy of those sections of referenced codes and standards applicable to that portion of the work to be accomplished in the field shall be made available by the Contractor at the preparatory inspection. These copies shall be maintained in the field and available for use by Government personnel until final acceptance of the work.

b. A review of the contract drawings.

c. A check to assure that all materials and/or equipment have been tested, submitted, and approved.

d. Review of provisions that have been made to provide required control inspection and testing.

e. Examination of the work area to assure that all required preliminary work has been completed and is in compliance with the contract.

f. A physical examination of required materials, equipment, and sample work to assure that they are on hand, conform to approved shop drawings or submitted data, and are properly stored.

g. A review of the appropriate activity hazard analysis to assure safety requirements are met.

h. Discussion of procedures for controlling quality of the work including repetitive deficiencies. Document construction tolerances and workmanship standards for that feature of work.

i. A check to ensure that the portion of the plan for the work to be performed has been accepted by the Contracting Officer.

j. Discussion of the initial control phase.

k. The Government shall be notified at least 24 hours in advance of beginning the preparatory control phase. This phase shall include a meeting conducted by the CQC System Manager and attended by the superintendent, other CQC personnel (as applicable), and the foreman responsible for the definable feature. The results of the preparatory phase actions shall be documented by separate minutes prepared by the CQC System Manager and attached to the daily CQC report. The Contractor shall instruct applicable workers as to the acceptable level of workmanship required in order to meet contract specifications.

3.6.2 Initial Phase

This phase shall be accomplished at the beginning of a definable feature of work. The following shall be accomplished:

a. A check of work to ensure that it is in full compliance with contract requirements. Review minutes of the preparatory meeting.

b. Verify adequacy of controls to ensure full contract compliance. Verify required control inspection and testing.

c. Establish level of workmanship and verify that it meets minimum acceptable workmanship standards. Compare with required sample panels as appropriate.

d. Resolve all differences.

e. Check safety to include compliance with and upgrading of the safety plan and activity hazard analysis. Review the activity analysis with each worker.

f. The Government shall be notified at least 24 hours in advance of beginning the initial phase. Separate minutes of this phase shall be prepared by the CQC System Manager and attached to the daily CQC report. Exact location of initial phase shall be indicated for future reference and comparison with follow-up phases.

g. The initial phase should be repeated for each new crew to work onsite, or any time acceptable specified quality standards are not being met.

3.6.3 Follow-up Phase

Daily checks shall be performed to assure control activities, including control testing, are providing continued compliance with contract

requirements, until completion of the particular feature of work. The checks shall be made a matter of record in the CQC documentation. Final follow-up checks shall be conducted and all deficiencies corrected prior to the start of additional features of work which may be affected by the deficient work. The Contractor shall not build upon nor conceal non-conforming work.

3.6.4 Additional Preparatory and Initial Phases

Additional preparatory and initial phases shall be conducted on the same definable features of work if: the quality of on-going work is unacceptable; if there are changes in the applicable CQC staff, onsite production supervision or work crew; if work on a definable feature is resumed after a substantial period of inactivity; or if other problems develop.

3.7 TESTS

3.7.1 Testing Procedure

The Contractor shall perform specified or required tests to verify that control measures are adequate to provide a product which conforms to contract requirements. Upon request, the Contractor shall furnish to the Government duplicate samples of test specimens for possible testing by the Government. Testing includes operation and/or acceptance tests when specified. The Contractor shall procure the services of a Corps of Engineers approved testing laboratory or establish an approved testing laboratory at the project site. The Contractor may elect to use a laboratory certified and accredited by the Concrete and cement Reference Laboratory (CCRL) or by AASHTO Materials Reference Laboratory (AMRL) for testing procedures that those organizations certify. The Contractor shall perform the following activities and record and provide the following data:

a. Verify that testing procedures comply with contract requirements.

b. Verify that facilities and testing equipment are available and comply with testing standards.

c. Check test instrument calibration data against certified standards.

d. Verify that recording forms and test identification control number system, including all of the test documentation requirements, have been prepared.

e. Results of all tests taken, both passing and failing tests, shall be recorded on the CQC report for the date taken. Specification paragraph reference, location where tests were taken, and the sequential control number identifying the test shall be given. If approved by the Contracting Officer, actual test reports may be submitted later with a reference to the test number and date taken. An information copy of tests performed by an offsite or commercial test facility shall be provided directly to the Contracting Officer. Failure to submit timely test reports as stated may result in nonpayment for related work performed and disapproval of the test facility for this contract.

3.7.2 Testing Laboratories

3.7.2.1 Capability Check

The Government reserves the right to check laboratory equipment in the proposed laboratory for compliance with the standards set forth in the

contract specifications and to check the laboratory technician's testing procedures and techniques. Laboratories utilized for testing soils, concrete, asphalt, and steel shall meet criteria detailed in ASTM D 3740 and ASTM E 329.

## 3.8 COMPLETION INSPECTION

### 3.8.1 Punch-Out Inspection

Near the end of the work, or any increment of the work established by a time stated in the SPECIAL CONTRACT REQUIREMENTS Clause, "Commencement, Prosecution, and Completion of Work", or by the specifications, the CQC Manager shall conduct an inspection of the work. A punch list of items which do not conform to the approved drawings and specifications shall be prepared and included in the CQC documentation, as required by paragraph DOCUMENTATION. The list of deficiencies shall include the estimated date by which the deficiencies will be corrected. The CQC System Manager or staff shall make a second inspection to ascertain that all deficiencies have been corrected. Once this is accomplished, the Contractor shall notify the Government that the facility is ready for the Government Pre-Final inspection.

### 3.8.2 Pre-Final Inspection

The Government will perform the pre-final inspection to verify that the facility is complete and ready to be occupied. A Government Pre-Final Punch List may be developed as a result of this inspection. The Contractor's CQC System Manager shall ensure that all items on this list have been corrected before notifying the Government, so that a Final inspection with the customer can be scheduled. Any items noted on the Pre-Final inspection shall be corrected in a timely manner. These inspections and any deficiency corrections required by this paragraph shall be accomplished within the time slated for completion of the entire work or any particular increment of the work if the project is divided into increments by separate completion dates.

### 3.8.3 Final Acceptance Inspection

The Contractor's Quality Control Inspection personnel, plus the superintendent or other primary management person, and the Contracting Officer's Representative shall be in attendance at the final acceptance inspection. Additional Government personnel including, but not limited to, those from Base/Post Civil Facility Engineer user groups, and major commands may also be in attendance. The final acceptance inspection will be formally scheduled by the Contracting Officer based upon results of the Pre-Final inspection. Notice shall be given to the Contracting Officer at least 14 days prior to the final acceptance inspection and shall include the Contractor's assurance that all specific items previously identified to the Contractor as being unacceptable, along with all remaining work performed under the contract, will be complete and acceptable by the date scheduled for the final acceptance inspection. Failure of the Contractor to have all contract work acceptably complete for this inspection will be cause for the Contracting Officer to bill the Contractor for the Government's additional inspection cost in accordance with the contract clause titled "Inspection of Construction".

## 3.9 DOCUMENTATION

The Contractor shall maintain current records providing factual evidence that required quality control activities and/or tests have been performed. These records shall include the work of subcontractors and suppliers using government-provided software, QCS (set Section 01 45 02.00 10). The report

includes, as a minimum, the following information:

a. Contractor/subcontractor and their area of responsibility.

b. Operating plant/equipment with hours worked, idle, or down for repair.

c. Work performed each day, giving location, description, and by whom. When Network Analysis (NAS) is used, identify each phase of work performed each day by NAS activity number.

d. Test and/or control activities performed with results and references to specifications/drawings requirements. The control phase shall be identified (Preparatory, Initial, Follow-up). List of deficiencies noted, along with corrective action.

e. Quantity of materials received at the site with statement as to acceptability, storage, and reference to specifications/drawings requirements.

f. Submittals and deliverables reviewed, with contract reference, by whom, and action taken.

g. Offsite surveillance activities, including actions taken.

h. Job safety evaluations stating what was checked, results, and instructions or corrective actions.

i. Instructions given/received and conflicts in plans and/or specifications.

j. Contractor's verification statement.

These records shall indicate a description of trades working on the project; the number of personnel working; weather conditions encountered; and any delays encountered. These records shall cover both conforming and deficient features and shall include a statement that equipment and materials incorporated in the work and workmanship comply with the contract. The original and one copy of these records in report form shall be furnished to the Government daily within 24 hours after the date covered by the report, except that reports need not be submitted for days on which no work is performed. As a minimum, one report shall be prepared and submitted for every 7 days of no work and on the last day of a no work period. All calendar days shall be accounted for throughout the life of the contract. The first report following a day of no work shall be for that day only. Reports shall be signed and dated by the CQC System Manager. The report from the CQC System Manager shall include copies of test reports and copies of reports prepared by all subordinate quality control personnel. The Contractor may submit these forms electronically, in lieu of hard copy.

## 3.10 NOTIFICATION OF NONCOMPLIANCE

The Contracting Officer will notify the Contractor of any detected noncompliance with the foregoing requirements. The Contractor shall take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the work site, shall be deemed sufficient for the purpose of notification. If the Contractor fails or refuses to comply promptly, the Contracting Officer may issue an order

stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to such stop orders shall be made the subject of claim for extension of time or for excess costs or damages by the Contractor.

3.11 ATTACHMENT

CQC Report

-- End of Section --

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ENVIRONMENTAL PROTECTION

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

U.S. ARMY CORPS OF ENGINEERS (USACE)

| | |
|---|---|
| EM 385-1-1 | (2003) Safety -- Safety and Health Requirements |
| WETLAND MANUAL | Corps of Engineers Wetlands Delineation Manual Technical Report Y-87-1 |

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

| | |
|---|---|
| 33 CFR 328 | Definitions of Waters of the United States |
| 40 CFR 261 | Identification and Listing of Hazardous Waste |
| 40 CFR 262 | Standards Applicable to Generators of Hazardous Waste |
| 40 CFR 279 | Standards for the Management of Used Oil |
| 40 CFR 302 | Designation, Reportable Quantities, and Notification |
| 40 CFR 355 | Emergency Planning and Notification |
| 49 CFR 171 - 178 | Hazardous Materials Regulations |

1.2 DEFINITIONS

1.2.1 Environmental Pollution and Damage

Environmental pollution and damage is the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to humankind; or degrade the environment aesthetically, culturally and/or historically.

1.2.2 Environmental Protection

Environmental protection is the prevention/control of pollution and habitat disruption that may occur to the environment during construction. The control of environmental pollution and damage requires consideration of land, water, and air; biological and cultural resources; and includes management of visual aesthetics; noise; solid, chemical, gaseous, and liquid waste; radiant energy and radioactive material as well as other pollutants.

### 1.2.3 Contractor Generated Hazardous Waste

Contractor generated hazardous waste means materials that, if abandoned or disposed of, may meet the definition of a hazardous waste. These waste streams would typically consist of material brought on site by the Contractor to execute work, but are not fully consumed during the course of construction. Examples include, but are not limited to, excess paint thinners (i.e. methyl ethyl keytone, toluene etc.), waste thinners, excess paints, excess solvents, waste solvents, and excess pesticides, and contaminated pesticide equipment rinse water.

### 1.2.4 Land Application for Discharge Water

The term ”Land Application” for discharge water implies that the Contractor shall discharge water at a rate which allows the water to percolate into the soil. No sheeting action, soil erosion, discharge into storm sewers, discharge into defined drainage areas, or discharge into the 11waters of the United States11 shall occur. Land Application shall be in compliance with all applicable Federal, State, and local laws and regulations.

### 1.2.5 Pesticide

Pesticide is defined as any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest, or intended for use as a plant regulator, defoliant or desiccant.

### 1.2.6 Pests

The term”pests” means arthropods, birds, rodents, nematodes, fungi, bacteria, viruses, algae, snails, marine borers, snakes, weeds and other organisms (except for human or animal disease-causing organisms) that adversely affect readiness, military operations, or the well-being of personnel and animals; attack or damage real property, supplies, equipment, or vegetation; or are otherwise undesirable

### 1.2.7 Surface Discharge

The term”Surface Discharge” implies that the water is discharged with possible sheeting action and subsequent soil erosion may occur. Waters that are surface discharged may terminate in drainage ditches, storm sewers, creeks, and/or”waters of the United States” and would require a permit to discharge water from the governing agency.

### 1.2.8 Waters of the United States

All waters which are under the jurisdiction of the Clean Water Act, as defined in 33 CFR 328.

### 1.2.9 Wetlands

Wetlands means those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, and bogs. Official determination of whether or not an area is classified as a wetland must be done in accordance with WETLAND MANUAL.

## 1.3 GENERAL REQUIREMENTS

The Contractor shall minimize environmental pollution and damage that may

occur as the result of construction operations. The environmental resources within the project boundaries and those affected outside the limits of permanent work shall be protected during the entire duration of this contract. The Contractor shall comply with all applicable environmental Federal, State, and local laws and regulations. The Contractor shall be responsible for any delays resulting from failure to comply with environmental laws and regulations.

1.4 SUBCONTRACTORS

The Contractor shall ensure compliance with this section by subcontractors.

1.5 PAYMENT

No separate payment will be made for work covered under this section. The Contractor shall be responsible for payment of fees associated with environmental permits, application, and/or notices obtained by the Contractor. All costs associated with this section shall be included in the contract price. The Contractor shall be responsible for payment of all fines/fees for violation or non-compliance with Federal, State, Regional and local laws and regulations.

1.6 SUBMITTALS

Government approval is required for submittals with a “G” designation; submittals not having a “G” designation are for information only. When used, a designation following the “G”designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with SECTION 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Environmental Protection Plan; G

The written site specific environmental protection plan.

1.7 ENVIRONMENTAL PROTECTION PLAN

Prior to commencing construction activities or delivery of materials to the site, submit an Environmental Protection Plan for review and approval by the Contracting Officer. The purpose of the Environmental Protection Plan is to present a comprehensive overview of known or potential environmental issues which the Contractor must address during construction. Issues of concern must be defined within the Environmental Protection Plan as outlined in this section. Address each topic at a level of detail commensurate with the environmental issue and required construction task(s). Topics or issues which are not identified in this section, but are considered necessary, must be identified and discussed after those items formally identified in this section. Prior to submittal of the Environmental Protection Plan, meet with the Contracting Officer for the purpose of discussing the implementation of the initial Environmental Protection Plan; possible subsequent additions and revisions to the plan including any reporting requirements; and methods for administration of the Contractor's Environmental Plans. The Environmental Protection Plan must be current and maintained onsite by the Contractor.

1.7.1 Compliance

No requirement in this Section will relieve the Contractor of any

applicable Federal, State, and local environmental protection laws and regulations. During Construction, the Contractor will be responsible for identifying, implementing, and submitting for approval any additional requirements to be included in the Environmental Protection Plan.

1.7.2 Contents

Include in the environmental protection plan, but not limit it to, the following:

a. Name(s) of person(s) within the Contractor's organization who is(are) responsible for ensuring adherence to the Environmental Protection Plan.

b. Name(s) and qualifications of person(s) responsible for manifesting hazardous waste to be removed from the site, if applicable.

c. Name(s) and qualifications of person(s) responsible for training the Contractor's environmental protection personnel.

d. Description of the Contractor's environmental protection personnel training program.

e. An erosion and sediment control plan which identifies the type and location of the erosion and sediment controls to be provided. The plan must include monitoring and reporting requirements to assure that the control measures are in compliance with the erosion and sediment control plan, Federal, State, and local laws and regulations. A Storm Water Pollution Prevention Plan (SWPPP) may be substituted for this plan.

f. Drawings showing locations of proposed temporary excavations or embankments for haul roads, stream crossings, material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials including methods to control runoff and to contain materials on the site.

g. Traffic control plans including measures to reduce erosion of temporary roadbeds by construction traffic, especially during wet weather. Plan shall include measures to minimize the amount of mud transported onto paved public roads by vehicles or runoff.

h. Work area plan showing the proposed activity in each portion of the area and identifying the areas of limited use or nonuse. Plan should include measures for marking the limits of use areas including methods for protection of features to be preserved within authorized work areas.

i. Drawing showing the location of borrow areas.

j. The Spill Control plan shall include the procedures, instructions, and reports to be used in the event of an unforeseen spill of a substance regulated by 40 CFR 302, 40 CFR 355, and/or regulated under State or Local laws and regulations. The Spill Control Plan supplements the requirements of EM 385-1-1. This plan shall include as a minimum:

1. The name of the individual who will report any spills or hazardous substance releases and who will follow up with complete documentation. This individual shall immediately notify the Contracting Officer and the local Fire Department in addition to the legally required Federal, State, and local reporting channels (including the National Response Center 1-800-424-8802) if a

reportable quantity is released to the environment. The plan shall contain a list of the required reporting channels and telephone numbers.

2. The name and qualifications of the individual who will be responsible for implementing and supervising the containment and cleanup.

3. Training requirements for Contractor's personnel and methods of accomplishing the training.

4. A list of materials and equipment to be immediately available at the job site, tailored to cleanup work of the potential hazard(s) identified.

5. The names and locations of suppliers of containment materials and locations of additional fuel oil recovery, cleanup, restoration, and material-placement equipment available in case of an unforeseen spill emergency.

6. The methods and procedures to be used for expeditious contaminant cleanup.

k. A non-hazardous solid waste disposal plan identifying methods and locations for solid waste disposal including clearing debris. The plan shall include schedules for disposal. The Contractor shall identify any subContractors responsible for the transportation and disposal of solid waste. Licenses or permits shall be submitted for solid waste disposal sites that are not a commercial operating facility. Evidence of the disposal facility's acceptance of the solid waste shall be attached to this plan during the construction. The Contractor shall attach a copy of each of the Non-hazardous Solid Waste Diversion Reports to the disposal plan. The report shall be submitted on the first working day after the first quarter that non-hazardous solid waste has been disposed and/or diverted and shall be for the previous quarter (e.g. the first working day of January, April, July, and October). The report shall indicate the total amount of waste generated and total amount of waste diverted in cubic yards or tons along with the percent that was diverted.

l. A recycling and solid waste minimization plan with a list of measures to reduce consumption of energy and natural resources. The plan shall detail the Contractor's actions to comply with and to participate in Federal, State, Regional, and local government sponsored recycling programs to reduce the volume of solid waste at the source.

m. An air pollution control plan detailing provisions to assure that dust, debris, materials, trash, etc., do not become air borne and travel off the project site.

n. A contaminant prevention plan that: identifies potentially hazardous substances to be used on the job site; identifies the intended actions to prevent introduction of such materials into the air, water, or ground; and details provisions for compliance with Federal, State, and local laws and regulations for storage and handling of these materials. In accordance with EM 385-1-1, a copy of the Material Safety Data Sheets (MSDS) and the maximum quantity of each hazardous material to be on site at any given time shall be included in the contaminant prevention plan. As new hazardous materials are brought on site or removed from the site, the plan shall be updated.

o. A waste water management plan that identifies the methods and procedures for management and/or discharge of waste waters which are directly derived from construction activities, such as concrete curing water, clean-up water, dewatering of ground water, disinfection water, hydrostatic test water, and water used in flushing of lines. If a settling/retention pond is required, the plan shall include the design of the pond including drawings, removal plan, and testing requirements for possible pollutants. If land application will be the method of disposal for the waste water, the plan shall include a sketch showing the location for land application along with a description of the pretreatment methods to be implemented. If surface discharge will be the method of disposal, a copy of the permit and associated documents shall be included as an attachment prior to discharging the waste water. If disposal is to a sanitary sewer, the plan shall include documentation that the Waste Water Treatment Plant Operator has approved the flow rate, volume, and type of discharge.

p. A historical, archaeological, cultural resources biological resources and wetlands plan that defines procedures for identifying and protecting historical, archaeological, cultural resources, biological resources and wetlands known to be on the project site: and/or identifies procedures to be followed if historical archaeological, cultural resources, biological resources and wetlands not previously known to be onsite or in the area are discovered during construction. The plan shall include methods to assure the protection of known or discovered resources and shall identify lines of communication between Contractor personnel and the Contracting Officer.

q. A pesticide treatment plan shall be included and updated, as information becomes available. The plan shall include: sequence of treatment, dates, times, locations, pesticide trade name, EPA registration numbers, authorized uses, chemical composition, formulation, original and applied concentration, application rates of active ingredient (i.e. pounds of active ingredient applied), equipment used for application and calibration of equipment. The Contractor is responsible for Federal, State, Regional and Local pest management record keeping and reporting requirements as well as any additional specific requirements.

### 1.7.3 Appendix

Copies of all environmental permits permit application packages, approvals to construct, notifications, certifications, reports, and termination documents shall be attached, as an appendix, to the Environmental Protection Plan.

## 1.8 PROTECTION FEATURES

This paragraph supplements the Contract Clause PROTECTION OF EXISTING VEGETATION, STRUCTURES, EQUIPMENT, UTILITIES, and AND IMPROVEMENTS. Prior to start of any onsite construction activities, the Contractor and the Contracting Officer shall make a joint condition survey. Immediately following the survey, the Contractor shall prepare a brief report including a plan describing the features requiring protection under the provisions of the Contract Clauses, which are not specifically identified on the drawings as environmental features requiring protection along with the condition of trees, shrubs and grassed areas immediately adjacent to the site of work and adjacent to the Contractor's assigned storage area and access route(s), as applicable. This survey report shall be signed by both the Contractor and the Contracting Officer upon mutual agreement as to its accuracy and completeness. The Contractor shall protect those environmental features

included in the survey report and any indicated on the drawings, regardless of interference which their preservation may cause to the Contractor's work under the contract.

1.9 ENVIRONMENTAL ASSESSMENT OF CONTRACT DEVIATIONS

Any deviations, requested by the Contractor, from the drawings, plans and specifications which may have an environmental impact will be subject to approval by the Contracting Officer and may require an extended review, processing, and approval time. The Contracting Officer reserves the right to disapprove alternate methods, even if they are more cost effective, if the Contracting Officer determines that the proposed alternate method will have an adverse environmental impact.

1.10 NOTIFICATION

The Contracting Officer will notify the Contractor in writing of any observed noncompliance with Federal, State or local environmental laws or regulations, permits, and other elements of the Contractor's Environmental Protection plan. The Contractor shall, after receipt of such notice, inform the Contracting Officer of the proposed corrective action and take such action when approved by the Contracting Officer. The Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No time extensions shall be granted or equitable adjustments allowed to the Contractor for any such suspensions. This is in addition to any other actions the Contracting Officer may take under the contract, or in accordance with the Federal Acquisition Regulation or Federal Law.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 ENVIRONMENTAL PERMITS AND COMMITMENTS

The Contractor shall be responsible for obtaining and complying with all environmental permits and commitments required by Federal, State, Regional, and local environmental laws and regulations.

3.2 LAND RESOURCES

The Contractor shall confine all activities to areas defined by the drawings and specifications. Prior to the beginning of any construction, the Contractor shall identify any land resources to be preserved within the work area. Except in areas indicated on the drawings or specified to be cleared, the Contractor shall not remove, cut, deface, injure, or destroy land resources including trees, shrubs, vines, grasses, topsoil, and land forms without approval. No ropes, cables, or guys shall be fastened to or attached to any trees for anchorage unless specifically authorized. The Contractor shall provide effective protection for land and vegetation resources at all times as defined in the following subparagraphs. Stone, soil, or other materials displaced into unclear areas shall be removed by the Contractor.

3.2.1 Work Area Limits

Prior to commencing construction activities, the Contractor shall mark the areas that need not be disturbed under this contract. Isolated areas within the general work area which are not to be disturbed shall be marked or fenced. Monuments and markers shall be protected before construction operations commence. Where construction operations are to be conducted

during darkness, any markers shall be visible in the dark. The Contractor's personnel shall be knowledgeable of the purpose for marking and/or protecting particular objects.

### 3.2.2 Landscape

Trees, shrubs, vines, grasses, land forms and other landscape features indicated and defined on the drawings to be preserved shall be clearly identified by marking, fencing, or wrapping with boards, or any other approved techniques. The Contractor shall restore landscape features damaged or destroyed during construction operations outside the limits of the approved work area.

### 3.2.3 Erosion and Sediment Controls

The Contractor shall be responsible for providing erosion and sediment control measures in accordance with Federal, State, and local laws and regulations. The erosion and sediment controls selected and maintained by the Contractor shall be such that water quality standards are not violated as a result of the Contractor's construction activities. The area of bare soil exposed at any one time by construction operations should be kept to a minimum. The Contractor shall construct or install temporary and permanent erosion and sediment control best management practices (BMPs) as specified in this Contract. BMPs may include, but not be limited to, vegetation cover, stream bank stabilization, slope stabilization, silt fences, construction of terraces, interceptor channels, sediment traps, inlet and outfall protection, diversion channels, and sedimentation basins. The Contractor's best management practices shall also be in accordance with the National Pollutant Discharge Elimination System (NPDES) Storm Water Pollution Prevention Plan (SWPPP) of this Contract. Any temporary measures shall be removed after the area has been stabilized.

### 3.2.4 Contractor Facilities and Work Areas

The Contractor's field offices, staging areas, stockpile storage, and temporary buildings shall be placed in areas designated on the drawings or as directed by the Contracting Officer. Temporary movement or relocation approved. Erosion and sediment controls shall be provided for on-site borrow and spoil areas to prevent sediment from entering nearby waters. Temporary excavation and embankments for plant and/or work areas shall be controlled to protect adjacent areas.

## 3.3 WATER RESOURCES

The Contractor shall monitor construction activities to prevent pollution of surface and ground waters. Toxic or hazardous chemicals shall not be applied to soil or vegetation unless otherwise indicated. All water areas affected by construction activities shall be monitored by the Contractor.

For construction activities immediately adjacent to impaired surface waters, the Contractor shall be capable of quantifying sediment or pollutant loading to that surface water when required by State or Federally issued Clean Water Act permits.

### 3.3.1 Diversions, and Dewatering Operations

See SECTION 02220: DREDGING, EXCAVATION AND DISPOSAL

### 3.3.2 Stream Crossings

Stream crossings shall allow movement of materials or equipment without violating water pollution control standards of the Federal, State, and

local governments. Construction of stream crossing structures shall be in compliance with Clean Water Act Section 404.

3.3.3 Wetlands

The Contractor shall not enter, disturb, destroy, or allow discharge of contaminants into any wetlands.

3.4 AIR RESOURCES

Equipment operation, activities, or processes performed by the Contractor shall be in accordance with all Federal and State air emission and performance laws and standards.

3 .4.1 Particulates

Dust particles; aerosols and gaseous by-products from construction activities; and processing and preparation of materials, such as from asphalt batch plants; shall be controlled at all times, including weekends, holidays and hours when work is not in progress. The Contractor shall maintain excavations, stockpiles, haul roads, permanent and temporary access roads, plant sites, spoil areas, borrow areas, and other work areas within or outside the project boundaries free from particulates which would cause the Federal, State, and local air pollution standards to be exceeded or which would cause a hazard or a nuisance. Sprinkling, chemical treatment of an approved type, baghouse, scrubbers, electrostatic precipitators or other methods will be permitted to control particulates in the work area. Sprinkling, to be efficient, must be repeated to keep the disturbed area damp at all times. The Contractor must have sufficient, competent equipment available to accomplish these tasks. Particulate control shall be performed as the work proceeds and whenever a particulate nuisance or hazard occurs. The Contractor shall comply with all State and local visibility regulations.

3.4.2 Odors

Odors from construction activities shall be controlled at all times. The odors shall not cause a health hazard and shall be in compliance with State regulations and/or local ordinances.

3.4.3 Sound Intrusions

The Contractor shall keep construction activities under surveillance and control to minimize environment damage by noise. The Contractor shall comply with the provisions of the State of Alaska rules.

3.4.4 Burning

Burning will not be allowed on the project site unless specified in other sections of the specifications.

3.5 CHEMICAL MATERIALS MANAGEMENT AND WASTE DISPOSAL

Disposal of wastes shall be as directed below, unless otherwise specified in other sections and/or shown on the drawings.

3.5.1 Solid Wastes

Solid wastes (excluding clearing debris) shall be placed in containers which are emptied on a regular schedule. Handling, storage, and disposal shall be conducted to prevent contamination. Segregation measures shall be employed so that no hazardous or toxic waste will become co-mingled with solid waste. The Contractor shall transport solid waste off Government

property and dispose of it in compliance with Federal, State, and local requirements for solid waste disposal. A Subtitle D RCRA permitted landfill shall be the minimum acceptable off-site solid waste disposal option. The Contractor shall verify that the selected transporters and disposal facilities have the necessary permits and licenses to operate.

3.5.2 Chemicals and Chemical Wastes

Chemicals shall be dispensed ensuring no spillage to the ground or water. Periodic inspections of dispensing areas to identify leakage and initiate corrective action shall be performed and documented. This documentation will be periodically reviewed by the Government. Chemical waste shall be collected in corrosion resistant, compatible containers. Collection drums shall be monitored and removed to a staging or storage area when contents are within 6 inches of the top. Wastes shall be classified, managed, stored, and disposed of in accordance with Federal, State, and local laws and regulations.

3.5.3 Contractor Generated Hazardous Wastes/Excess Hazardous Materials

Hazardous wastes are defined in 40 CFR 261, or are as defined by applicable State and local regulations. Hazardous materials are defined in 49 CFR 171 - 178. The Contractor shall, at a minimum, manage and store hazardous waste in compliance with 40 CFR 262 and shall manage and store hazardous waste in accordance with the Project Office hazardous waste management plan. The Contractor shall take sufficient measures to prevent spillage of hazardous and toxic materials during dispensing. The Contractor shall segregate hazardous waste from other materials and wastes, shall protect it from the weather by placing it in a safe covered location, and shall take precautionary measures such as berms or other appropriate measures against accidental spillage. The Contractor shall be responsible for storage, describing, packaging, labeling, marking, and placarding of hazardous waste and hazardous material in accordance with 49 CFR 171 - 178, State, and local laws and regulations. The Contractor shall transport Contractor generated hazardous waste off Government property within 60 days in accordance with the Environmental Protection Agency and the Department of Transportation laws and regulations. The Contractor shall dispose of hazardous waste in compliance with Federal, State and local laws and regulations. Spills of hazardous or toxic materials shall be immediately reported to the Contracting Officer. Cleanup and cleanup costs due to spills shall be the Contractor's responsibility. The disposition of Contractor generated hazardous waste and excess hazardous materials are the Contractor's responsibility.

3.5.4 Fuel and Lubricants

Storage, fueling and lubrication of equipment and motor vehicles shall be conducted in a manner that affords the maximum protection against spill and evaporation. Fuel, lubricants and oil shall be managed and stored in accordance with all Federal, State, Regional, and local laws and regulations. Used lubricants and used oil to be discarded shall be stored in marked corrosion-resistant containers and recycled or disposed in accordance with 40 CFR 279, State, and local laws and regulations. Storage of fuel on the project site shall be accordance with all Federal, State, and local laws and regulations.

3.5.5 Waste Water

Disposal of waste water will be as specified below.

a. Waste water from construction activities, such as onsite material processing, concrete curing, foundation and concrete clean-up, water used in concrete trucks, forms, etc. shall not be

allowed to enter water ways or to be discharged prior to being treated to remove pollutants. The Contractor shall dispose of the construction related waste water in accordance with all Federal, State, Regional and Local laws and regulations.

b. For discharge of ground water, the Contractor shall surface discharge in accordance with all Federal, State, and local laws and regulations.

## 3.6 RECYCLING AND WASTE MINIMIZATION

The Contractor shall participate in State and local government sponsored recycling programs. The Contractor is further encouraged to minimize solid waste generation throughout the duration of the project.

## 3.7 NON-HAZARDOUS SOLID WASTE DIVERSION REPORT

The Contractor shall maintain an inventory of non-hazardous solid waste diversion and disposal of construction and demolition debris. The Contractor shall submit a report to through the Contracting Officer on the first working day after each fiscal year quarter, starting the first quarter that non- hazardous solid waste has been generated. The following shall be included in the report:

a. Construction and Demolition (C&D) Debris Disposed = _____ in cubic yards or tons, as appropriate.

b. Construction and Demolition (C&D) Debris Recycled = _____ in cubic yards or tons, as appropriate.

c. Total C&D Debris Generated = _____ in cubic yards or tons, as appropriate.

d. Waste Sent to Waste-To-Energy Incineration Plant (This amount should not be included in the recycled amount) = _____ in cubic yards or tons, as appropriate.

## 3.8 HISTORICAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

Existing historical, archaeological, and cultural resources within the Contractor's work area are shown on the drawings. The Contractor shall protect these resources and shall be responsible for their preservation during the life of the Contract. If during excavation or other construction activities any previously unidentified or unanticipated historical, archaeological, and cultural resources are discovered or found, all activities that may damage or alter such resources shall be temporarily suspended. Resources covered by this paragraph include but are not limited to: any human skeletal remains or burials; artifacts; shell, midden, bone, charcoal, or other deposits; rock or coral alignments, paving, wall, or other constructed features; and any indication of agricultural or other human activities. Upon such discovery or find, the Contractor shall immediately notify the Contracting Officer so that the appropriate authorities may be notified and a determination made as to their significance and what, if any, special disposition of the finds should be made. The Contractor shall cease all activities that may result in impact to or the destruction of these resources. The Contractor shall secure the area and prevent employees or other persons from trespassing on, removing, or otherwise disturbing such resources.

## 3.9 BIOLOGICAL RESOURCES

The Contractor shall minimize interference with, disturbance to, and damage

to fish, wildlife, and plants including their habitat. The Contractor shall be responsible for the protection of threatened and endangered animal and plant species including their habitat in accordance with Federal, State, Regional, and local laws and regulations.

## 3.10 PREVIOUSLY USED EQUIPMENT

The Contractor shall clean all previously used construction equipment prior to bringing it onto the project site. The Contractor shall ensure that the equipment is free from soil residuals, egg deposits from plant pests, noxious weeds, and plant seeds. The Contractor shall consult with the USDA jurisdictional office for additional cleaning requirements.

## 3.11 MAINTENANCE OF POLLUTION FACILITIES

The Contractor shall maintain permanent and temporary pollution control facilities and devices for the duration of the contract or for that length of time construction activities create the particular pollutant.

## 3.12 TRAINING OF CONTRACTOR PERSONNEL

The Contractor's personnel shall be trained in all phases of environmental protection and pollution control. The Contractor shall conduct environmental protection/pollution control meetings for all Contractor personnel prior to commencing construction activities. Additional meetings shall be conducted for new personnel and when site conditions change. The training and meeting agenda shall include: methods of detecting and avoiding pollution; familiarization with statutory and contractual pollution standards; installation and care of devices, vegetative covers, and instruments required for monitoring purposes to ensure adequate and continuous environmental protection/pollution control; anticipated hazardous or toxic chemicals or wastes, and other regulated contaminants; recognition and protection of archaeological sites, artifacts, wetlands, and endangered species and their habitat that are known to be in the area.

## 3.13 POST CONSTRUCTION CLEANUP

The Contractor shall clean up all areas used for construction. The Contractor shall, unless otherwise instructed in writing by the Contracting Officer, obliterate all signs of temporary construction facilities such as haul roads, work area, structures, foundations of temporary structures, stockpiles of excess or waste materials, and other vestiges of construction prior to final acceptance of the work. The disturbed area shall be graded, filled and the entire area seeded unless otherwise indicated.

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MECHANICAL DREDGE SILENT INSPECTOR PART 1



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SECTION 35 20 23

MECHANICAL DREDGE SILENT INSPECTOR PART 1

PART 1 GENERAL

1.1 DESCRIPTION

The work under this contract requires use of the Silent Inspector (SI) System to monitor removal and relocation of material, and report and manage the data. This performance based specification identifies required output and precision and instrumentation requirements. The requirements may be satisfied using equipment and technical procedures selected by the Contractor.

1.2 SUBMITTALS

Government approval is required for submittals with a [11]G[11] designation; submittals not having a [11]G[11] designation are for information only. When used, a designation following the [11]G[11] designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Dredge Plant Instrumentation Plan; G

SD-07 Certificates

Silent Inspector Certification; G

1.3 PAYMENT

No separate payment will be made for installation, operation and maintenance of the SI system as specified herein for the duration of the dredging operations; all costs in connection therewith will be considered a subsidiary obligation of the Contractor and covered under the contract unit prices in the bidding schedule.

1.4 SILENT INSPECTOR CERTIFICATION

The Contractor is required to have a current Silent Inspector Certification for the dredge SI system used under this contract, at the time of issuance of Notice to Proceed. Certification shall be based on an on-site dredge inspection conducted by Silent Inspector Support Center personnel.

The Inspection shall include:

A series of data quality checks as described in paragraph 3.5 [11]Compliance Inspection and Quality Assurance Checks[11], Verification of data acquisition and transfer (Paragraph 3.2), Review of the Dredge Plant Instrumentation Plan (DPIP) as described in Paragraph 1.5

A Silent Inspector Certification is valid for one year from the date of

certification. The owner or operator of the dredge shall contact the SI Support Center at 1-877840-8024 on an annual basis to schedule re-inspection, allowing ample time for recertification, and coordinate this with all local authorities. The Contractor shall have personnel, who are familiar with the SI system instrumentation and have the expertise to recalibrate sensors, on site during the inspection. Re-inspection is required for any yard work which changes sensor type or location. These changes will be reported in the sensor log section of the DPIP. If the SI system has been disabled or turned off, re-calibration of all sensors and concurrent re-certification will be required. This is not to be construed that data must be continually transmitted if the dredge is between jobs or engaged in a non-government project which does not require certification.

1.5 DREDGE PLANT INSTRUMENTATION PLAN (DPIP)

The Contractor shall have a DPIP on file with the National SI Support Team. This document shall describe how sensor data will be collected, how quality control on the data will be performed, and how sensors/data reporting equipment will be calibrated and repaired if they fail. A description of computed dredge specific data and how the sensor data will be transmitted to the Silent Inspector Database shall also be included. The Contractor shall submit to the SI Support Center any addendum or modifications made to the plan subsequent to its original submission, prior to Notice to Proceed. The Contractor shall also maintain a copy of the DPIP on the dredge which is readily accessible to Government personnel at all times.

The DPIP shall include the following as a minimum: (DPIP must have table of context in the following order)

Dredging Company
Dredge Point of Contact
Phone Number
Dredge Monitoring System Provider
Dredge Monitoring System Point of Contact
Telephone Number
Dredge Name/ID
Methods for sensor repair, replacement, installation, modification or calibration
Data reporting equipment
Procedure for providing sensor data/computed data to SI Database via e-mail
System telemetry
Dimensioned Drawings of the Dredge
Typical plan and profile view of the dredge showing: o Locations of required sensors referenced to:
fore and aft perpendicular and/or bucket teeth and pivot.
each other
overall dredge and bucket dimensions
Description of how the UTC time stamp is collected
Positioning system
Brand name and specifications
Sampling rates for data acquisition
Any calculation done external to the instrumentation
Certificates of calibration and/or manufacturer certificates of compliance
Vertical correction
Description of how tidal/river stage information is entered into the data string.
Bucket Depth

Brand name and specifications for instrumentation

Sampling rates for data acquisition
Any calculation done external to the instrumentation
Certificates of calibration and/or manufacturer certificates of compliance
Method used to zero the instrumentation at the surface of the water
Bucket Characteristics
Bucket types
Number of buckets
Capacity
Bucket Status
Criteria and methods used for determining dig/dump
Any associated instrumentation specifications
Contractor. Data
Backup frequency
Backup method
Post processing
Archive capability
Documentation of :
Test methods used by the contractor to provide quality control of data
Verification that the reported values are applicable for the sensor and application
Log of sensor performance and modifications
End of job data archive log

Any changes to the computation methods during the dredging contract shall be approved by the Silent Inspector Support Center prior to their implementation.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 SPECIFICATIONS FOR REPORTED DATA

The contractor shall provide, operate and maintain all hardware and software to meet these specifications. The Contractor shall be responsible for replacement, repair and calibration of sensors and other necessary data acquisition equipment needed to supply the required data.

Repairs shall be completed within 48 hours of any system/sensor failure. Upon completion of a repair, replacement, installation, modification or calibration the Contractor shall notify the Contracting Office's Representative. The Contracting Office's Representative may request re-calibration of sensors or other hardware components at any time during contract execution as deemed necessary.

The Contractor shall keep a log of sensor repair, replacement, installation, modification and calibration in the dredge's onboard copy of the DPIP. The log shall contain a three-year history of sensor maintenance which includes: the time of sensor failures (and subsequent repairs), the time and results of sensor calibrations, the time of sensor replacements, and the time that backup sensor systems are initiated to provide required data. It shall also contain the name of the person responsible for the sensor work. Only sensors that affect the data reported in paragraph 3.3.6, "Reporting Metadata", are affected by this logging requirement.

3.1.1 Date and Time

and time shall be reported to the nearest second and referenced to UTC time based on a 24 hour format. The reported time is the time the measurements were taken.

3.1.2 Horizontal Positioning of the Bucket

Horizontal positioning of the bucket shall be obtained using a positioning system operating with a minimum accuracy level of 1 to 3 meters horizontal Circular Error Probable (CEP). Position shall be reported as Latitude/Longitude WGS 84.

3.1.3 Vertical Correction

Vertical correction data shall be obtained using appropriate equipment to give the water level with an accuracy of + 0.1 feet and a resolution of 0.01 feet. Elevation values for tide or river-stage above the project datum described in the dredging specification shall be entered with a positive sign, and those below project datum shall be entered with a negative sign.

3.1.4 Bucket Depth (optional on jobs of less than 200,000 cyds unless material conditions warrant)

The bucket depth shall be the distance from the surface of the water to the teeth of the bucket when closed. An accuracy of + 0.5 feet with values recorded to the nearest 0.1 feet. The values will be positive below the surface and negative above the surface of the water. If accuracy is not able to be maintained out of the water, depths shall be reported as "Null".

3.1.5 Target Depth

The target depth is the depth below the surface of the water that has been computed to dredge to. This shall be recorded to the nearest 0.1 feet. Data will be relative to the water surface.

3.1.6 Bucket Status

Dig/Dump condition of bucket status shall be obtained. The dig condition would be when the bucket contains material and dump condition means the bucket does not contain material.

3.1.7 Bucket Volume

The volume of the bucket shall be reported in cubic yards. If the bucket is changed during a job then the bucket volume should change accordingly.

3.1.8 Bucket Type

The bucket type shall be listed in the data as a string. Examples of bucket types are Clam Shell, Environmental, Excavator and Dragline.

3.2 DATA MONITORING

Onboard sensors will continually monitor dredge conditions, operations and efficiency and route this information into the shipboard dredge-specific system computer (DSS) to assist in guiding dredge operations. Portions of this Contractor-collected information shall be transmitted to the SI Database via the internet, but the Contracting Officer's Representative

shall also have access to a visual display of the DSS computer's operational screen onboard the dredge.

3.2.1 Data Monitoring Computer Display

The contractor shall provide a separate monitor for the Contracting Officer's Representative, at a minimum displaying the dredge production information required within this specification. The monitor shall be in a dry, enclosed area aboard or nearby the dredge, separate from the operator's cab, and located in a position suitable for data viewing to the satisfaction of the Contracting Officer's Representative.

3.3 DATA REPORTING REQUIREMENTS

Contractor collected information shall be transmitted to the SI Database. The parameters which shall be reported to the SI Database include: date and time, bucket position and status, vertical correction and datum, bucket depth* and bucket characteristics.
* optional on jobs less than 200,000 cysts depending on material

3.3.1 Data Reporting Interface

The contractor may select any commercial satellite, cellular phone, or other data communications systems available to transmit the data to the SI Database via the Internet in the required mail message format. The data transition process from the dredge to the SI Database must be automated. The data may be sent from the dredge directly to the SI Database or to a shore based computer. Data transmitted to the SI Database should be raw data; any processing of the data conducted shore side shall be done using an automated software or programming routine. As per section 1.5, a description of this process shall be included in the DPIP.

3.3.2 Data Measurement Frequency

Data shall be logged as a series of events. Each event will consist of a data set containing dredge information as per section 3.1. There are two types of triggers for an event; dig/dump condition change and time lapse since last event. The time lapse trigger is 5 minutes since the last event. A standard data string should be recorded within one second of an event trigger.

3.3.3 Data Reporting

The system shall report this event history via Simple Mail Transport Protocol (SMTP) e-mail message to the SI Database Server. For this contract data will be reported . on a load basis (all data collected since last transmission sent at the completion of loading a scow) - OR - at regular intervals such that the time from when the data is collected until the time it is reported does not exceed 6 - OR 12 - OR - 24 hours.

The dredge shall continuously transmit data to the SI Database from mobilization until the final post-dredging survey has been accepted by the USACE.

3.3.4 Mail Message Format

The Simple Mail transport Protocol (Internet FRC 2821) shall be used to

report data to the SI Database. The mail message shall have the following contents (Internet RFC 2822):

To: sidatatransfer@usace.army.mil From: contractor's email address Subject: SISDATA Transfer
Attachment: SI MDATA html file

Mail message start of body SIMDATA
SI Mech Data Transfer Blank line

Optional additional annotations from the Contractor - all data after the blank line are ignored.

End of message

### 3.3.5 Mail Attachment File Format

The attached data file shall be a MIME encoded (Internet RFC 2045) Extensible HyperText Markup Language (W3C standard XHTML 1.1) document. Any length of data may be included, but the file attachment size should not exceed six Megabytes. Only the html, table, tr, th, td, h2, h3 and body tags are permissible. The attached file may be compressed as a zip file.

Line Breaks and spaces are added for readability here, but the carriage return, line feed character combination is only added to delineate records (MECH DREDGING DATA tag) for actual data transmission.

<?xml versiorr="11"1.0"11"?>
<MECH _DREDGING _DATA>
<DREDGE _NAME> string </DREDGE _NAME>
<MECH _DATA _RECORD>
<DATE _TIME> time date string </DATE _TIME>
<BUCKET_X coord _type = "11"(LL)"11"> floating point string </BUCKET_X>
<BUCKET_Y coord _type = "11"(LL)"11"> floating point string </BUCKET_Y>
<VERT _CORRECTION> floating point string </VERT _CORRECTION>
<BUCKET _DEPTH> floating point string </BUCKET _DEPTH>
<TARGET DEPTH> floating point string </TARGET _DEPTH>
<BUCKET _STATUS> bucket status string </BUCKET _STATUS>
<BUCKET _VOL> floating point string </BUCKET_VOL>
<BUCKET _TYPE> bucket type string </BUCKET_TYPE>
</MECH_DATA_RECORD>
</MECH_DREDGING_DATA>
Carriage return - ASCII value 13
Line Feed - ASCII value 10

### 3.3.6 Reporting Metadata

Data shall be reported to the SI database using the tags and criteria specified in the following table:

| Data Tag | Tag Notes |
|---|---|
| BUCKET _X | Longitude in decimal degrees. West Longitude values are reported as negative. The attribute coord_type shall be LL. See section 3.1.2 |
| BUCKET _Y | Latitude values are to be reported in decimal degrees. Northerly Latitude values are reported as positive. The attribute coord _type shall be LL . See section 3.1.2 |
| DATE TIME | mtn/dd/yyyy hh:mm:ss defined as UTC time of the measurement. All of the measurements should have occurred within one second of this reported time. See section 3.1.1 |
| V E R T CORRECTION | Water level elevation reported in feet; positive above project datum, negative below. See section 3.1.3 |
| BUCKET DEPTH | Bucket bite depth reported in feet. Depth values are positive below the water surface. See section 3.1.4 |
| TARGET DEPTH | Target bucket bite depth reported in feet. Depth values are positive below the water surface. See section 3.1.5 |
| BUCKET STATUS | Dig/Dump status of the bucket. See section 3.1.6 |
| BUCKET VOL | Volume of the currently used bucket reported in cyds. See Sec 3.1.7 |
| BUCKET TYPE | String describing bucket type currently in use, example; Clamshell, Environmental, Excavator, Dragline, etc... See Sec 3.1.8 |

### 3.3.7 Contractor Data Backup

The contractor shall maintain an archive of all data sent via SMTP to the SI Database. The Contracting Officer's Representative may require (at no increase to the contract price) that the Contractor provide a copy of these data covering specified time periods. The data shall be provided on PC format USB flash drive, CD-ROM , file transfer protocol (ftp) upload, or other storage medium acceptable to the Contracting Officer's Representative. At the end of the dredging contract the Contractor is responsible for contacting the national SI Support Center prior to discarding the data to ensure all data have been appropriately archived. The person who made the call, the date of the call, and the representative who gave permission to discard the data should be recorded in a separate section at the end of the Contractor's copy of the DPIP.

### 3.3.8 Data Reporting Example

```
<?xml version=11 1.0 11?>
<MECH DREDGING _DATA>
<DREDGE _NAME>Gov 1</DREDGE NAME>
<MECH _DATA RECORD>
<DATE _TIME>04/11/2006 13:12:05</DATE _TIME>
<BUCKET_X coord _type = 11 LL 11 >10 . 123345</BUCKET_X>
<BUCKET_Y coord _type = 11 LL 11 >-80 . 123333</BUCKET_Y>
<VERT _CORRECTION>- 0.1</VERT _CORRECTION>
<BUCKET DEPTH>55 . 10</BUCKET _DEPTH>
```

<TARGET _DEPTH>55 . 10</TARGET _DEPTH>
<BUCKET_STATUS >Dig< /BUCKET _STATUS>
<BUCKET _VOL>3 0< /BUCKET_VOL>
<BUCKET TYPE>Clamshell<BUCKET TYPE>
</MECH DATA RECORD>
</MECH DREDGING DATA>
<cr>
<lf>

## 3.4 PERFORMANCE REQUIREMENTS

The Contractor's Silent Inspector system shall be fully operational at the start of the dredging operations. To meet contract requirements for operability, the Contractor's system shall provide a minimum 85 percent data return and be 95 percent compliant with DPIP requirements. Data return percentage is defined as the total number of quality records sent, divided by the total possible number of records that could be sent by a system in good working order. Quality data strings are considered to be those providing accurate values for at least 8 of the 9 parameters reported. DPIP compliance is determined by percent of items listed in section 1.5 to be at minimum compliance. After fifty percent project completion, combined percentage of data return and DPIP compliance should equal 95 percent or better. If repairs necessary to restore the required percent data return are not made within 48 hours, or if the Contractor fails to report required data within the specified time window for dredge measurements (see paragraph 3.3.2 "Data Measurement Frequency" & 3.3.3 "Data Reporting"); the system will be declared not fully operational, and the Contractor will be assessed liquidated damages equivalent to the additional oversight hours that would be required for Corps personnel to be on site from the first full day after the system is deemed not operational through to the time when the system is returned to operational status.

## 3.5 COMPLIANCE INSPECTION AND QUALITY ASSURANCE CHECKS

Quality assurance checks are required prior to the commencement of dredging, and at the discretion of the Contracting Officer's Representative periodically throughout the duration of the contract.

### 3.5.1 Bucket Status Check

The Contracting Officer's Representative will document the status of the bucket used to determine the Dig/Dump condition of the dredge.

### 3.5.2 Bucket Depth Check

The Contracting Officer's Representative may require periodic calibration checks of the reported bucket depth over a calibration point at the project site. The Contracting Officer's Representative may also use direct means such as tape measures, sounding lines, and pressure sensors to directly measure bucket depth. The Contractor shall have on the dredge a clearly readable steel tape, chain, or wire graduated to a minimum of 1 foot increments. This tape or chain shall be capable of measuring the depth below water surface of the low fixed point of the bucket with sufficient length to measure 5 feet below the maximum project depth.. The Contracting Officer's Representative will review the bucket depth data to insure that the system is operating within acceptable accuracy, directing the contractor to re-calibrate or repair system components as necessary. Calibration delays are at the contractor's expense and do not warrant reimbursable time or cost by the government.

### 3.5.3 Position Check

During inspection the reported bucket position will be verified by comparison with readings from a handheld GPS receiver. Throughout the contract, the Contracting Officer's Representative will periodically verify positions by comparing readings from an independent GPS.

## 3.6 LIST OF ITEMS PROVIDED BY THE CONTRACTOR

| | |
|---|---|
| DPIP | Sec 1.4 Dredge Plant Instrumentation Plan |
| SI SYSTEM | |
| Sensor Instrumentation | Sec. 3.1 Specifications for Reported Data |
| Computer Monitor | Sec. 3.2.1 Data Monitoring Computer Display |
| DREDGE DATA | |
| Event documentation | Sec. 3.3.2 Data Measurement Frequency |
| Data reports | Sec. 3.3.3 Data Reporting |
| QA EQUIPMENT ON DREDGE | |
| Bucket depth chain | Sec. 3.5.2 Bucket Depth Check |

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TRANSITIONAL AND MAINTENANCE DREDGING



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TRANSITIONAL AND MAINTENANCE DREDGING

PART 1 GENERAL

1.1 WORK COVERED

Dredging shall include removal and disposal of all material as specified herein or indicated on the drawings. All dredging and disposal shall be accomplished in accordance with EM 1110-2-5025, Dredging and Dredged Material Disposal. Unless approved by the Contracting Officer, dredges shall remain on-site for dredging throughout the entire dredging season of 15 May through November 1 of each year awarded.

1.2 CHARACTER OF MATERIALS

1.2.1 Virgin Materials - Barge Berths, North and South Extensions

All materials to be initially dredged in the Barge Berths, North, and South Extension areas are virgin materials as characterized in the attached GEOTECHNICAL FINDINGS REPORT, Anchorage Harbor Deepening, Port of Anchorage, Alaska, June 2008, and the Trial Dredging Report, dated November 2008. Large boulders and obstructions are present within the limits of this contract.

1.2.2 Maintenance Dredging

Shoal materials will be continuously deposited within the project limits throughout the entire dredging season. Historically, shoaling of 3,000 to 19,000 cubic yards per day occurs within the project area. Previous dredging indicates that the material above the maximum pay line consists primarily of firm, cohesive sandy-silty-clay or sandy-clayey-silt, which may require some mechanical means of dislodging the material from any dump scow used on this project. Gradations from previous dredging operations show the material above the maximum pay-line to be sandy-silty-clay or sandy-clayey-silt with low plasticity (ML) and 90 to 95 percent by weight of the material passing the No. 200 sieve. Dry densities were determined to be between 85 and 105 pounds per cubic foot and moisture content to be 20 to 25 percent. Local, minor variations and some debris are to be expected, and if encountered shall not be considered materially different within the scope of the DIFFERING SITE CONDITIONS Clause. Any cobbles, boulders, and other debris shall be removed. Previous dredging records are available for examination in the office of the Alaska District Engineer.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

3.1 DREDGING

3.1.1 General

All dredging shall be performed within the dredging limits to the depths and grades shown on the drawings, and established by the Contracting

Officer subsequent to the pre-dredge survey according to SECTION 01 19 40.00 29, SPECIAL ITEMS, paragraph SURVEYS. Any contours shown on the drawings and Exhibits are approximate. Dredging within 5 feet of any structure will not be allowed.

### 3.1.2 Excessive Dredging

If the Contracting Officer determines that over-dredging results in incipient danger to the foundations of proposed or adjacent structures, the Contractor will be required to restore such dredged material with material approved by the Contracting Officer to the established limits of project dredging without additional cost to the Government. The Contractor shall obtain the backfill materials from its own source.

## 3.2 DISPOSAL OF DREDGED MATERIALS

### 3.2.1 Disposal Operations

Except as otherwise authorized by the Contracting Officer in writing, no dumping of dredged materials dredged by clamshell shall be done unless a representative of the Contracting Officer is present at the time. Any material dredged by clamshell that is deposited without a representative of the Contracting Officer present will not be paid for. The Contractor shall assume all risks in dredged material disposal operations. Any material that is deposited elsewhere than in places designated or approved by the Contracting Officer will not be paid for and the Contractor may be required to remove such misplaced material and deposit it where directed, at its expense.

### 3.2.2 Government-Furnished Disposal Area

The dredged materials shall be transported and deposited in the open water disposal site shown on the contract drawings unless an alternate disposal area is approved by the Contracting Officer. The top of the dredged material in the open water disposal area shall not be higher than -50 feet MLLW.

## 3.3 ATTACHMENTS

Findings of No Significant Impact (FONSI)
GEOTECHNICAL FINDINGS REPORT
TRIAL DREDGING REPORT

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DIVISION 35 - WATERWAY AND MARINE CONSTRUCTION

SECTION 35 22 24.00 29

HOPPER DREDGE SILENT INSPECTOR

GENERAL

1.1 DESCRIPTION

The work under this contract requires use of the Silent Inspector (SI) System to monitor the dredge's status at all times during the contract, and to track trip number, time-position history, instrument readings, vessel state, compute tons dry solids, report data, and manage data history. This performance-based specification section identifies the minimum required output and precision and instrumentation requirements. The requirements may be satisfied using equipment and technical procedures selected by the Contractor.

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office responsible for review of the submittal for the Government. The following shall be submitted in accordance with Section 01 33 00, "SUBMITTAL PROCEDURES":

SD-01, Preconstruction Submittals

Dredge Plant Instrumentation Plan; G, SAM-

OP-J SD-07 Certificates

Letter of Silent Inspector

Certification; G, OP

1.3 PAYMENT

No separate payment will be made for installation, operation and maintenance of the SI system as specified herein for the duration of the dredging operations; all costs in connection therewith will be considered a subsidiary obligation of the Contractor and covered under the contract unit prices for dredging in the bidding schedule.

1.4 SILENT INSPECTOR CERTIFICATION

The Contractor is required to have a current Silent Inspector Certification for the dredge instrumentation system to be used under this contract at the time of issuance of the Notice to

Proceed. Certification shall be based on an on-site dredge inspection conducted by Silent Inspector Support Center personnel.

The inspection shall include:

- A series of data quality checks as described in paragraph 3.5 “Compliance Inspection and Quality Assurance Checks”,
- Verification of data acquisition and transfer (Paragraph 3.2).
- Review of the Dredge Plant Instrumentation Plan (DPIP) as described in Paragraph 1.5.

A Silent Inspector Certification is valid for one year from the date of certification. The owner or operator of the dredge shall contact the SI Support Center at 1-877- 840-8024 on an annual basis to schedule re-inspection, allowing ample time for re-certification, and coordinate this with all local authorities. The Contractor shall have personnel, who are familiar with the SI system instrumentation and have the expertise to recalibrate sensors, on site during the inspection. Re-inspection is required for any yard work which produces modification to displacement (e.g. change in vessel lines, repositioning or repainting hull marks), modification to hopper volume (change in hopper dimensions or addition or subtraction of structure) or changes in sensor type or location. These changes will be reported in the sensor log section of the DPIP. If the SI system has been disabled or turned off, re-calibration of all sensors and concurrent re-certification will be required. This is not to be construed that data must be continually transmitted if the dredge is between jobs or engaged in a non-government project which does not require certification.

## 1.5 DREDGE PLANT INSTRUMENTATION PLAN (DPIP)

The Contractor shall have a DPIP on file with the National SI Support Center. This document shall describe how sensor data will be collected, how quality control on the data will be performed, and how sensors/data reporting equipment will be calibrated and repaired if they fail. A description of computed dredge specific data and how the sensor data will be transmitted to the Silent Inspector Database shall also be included. The Contractor shall submit to the SI support Center any addendum or modifications made to the plan subsequent to its original submission, prior to Notice to Proceed. The Contractor shall also maintain a copy of the DPIP on the dredge which is readily accessible to Government personnel at all times.

The DPIP shall include the following as a minimum: *(DPIP must have table of contents in the following order)*

- Dredging Company
    - Dredge Point of Contact

- Phone Number
- Dredge Monitoring System Provider
  - Dredge Monitoring System Point of Contact
  - Telephone Number
- Dredge Name
- Sensor data collection method
  - Any averaging
  - Route from sensor to SI computer
- SI Computer Hardware & Components
  - Brand names and specifications
  - User guides and owner manuals
- Sensor repair, replacement, installation, modification or calibration methods
- Dimensioned Drawings of the Dredge
  - A typical plan and profile view of the dredge showing:
    - Hopper cross section
    - Locations of required sensors referenced to:
      - Fore and aft perpendicular
      - Hopper length, depth, width, zero reference
      - External hull draft markings (latitudinal, longitudinal, keel)
      - Each other
    - Overall dredge dimensions
    - Dimensions of draghead
      - Length
      - Pipe inside diameter at sensor locations
      - Offset to positioning system antenna
- Criteria and method used to increment load number
- Description of how the UTC date/time stamp is collected
- Positioning system
  - Brand name and specifications
  - Dredge heading instrumentation brand name and specifications
  - Instrument used to calculate COG
  - Any calculation done external to the instrumentation
  - Certificates of calibration and/or manufacturer certificates of compliance
  - Description of how dredge speed is determined
- Tide
  - Description of how tidal information is entered into the data string.
- Hull status
  - Instrumentation brand name and specifications
  - Certificates of calibration and/or manufacturer certificates of compliance

- Any calculation done external to the instrumentation

- Drafts:
  - Instrumentation brand name and specifications
  - Certificates of calibration and/or manufacturer certificates of compliance
  - Any calculation done external to the instrumentation
- Displacement:
  - Method used by Contractor to calculate displacement based on fore and aft draft
  - Method used by Contractor to calculate lightship displacement
  - Hydrostatic curves
  - Tables listing (fresh and salt water) displacement as a function of draft certified by a licensed marine surveyor/ naval architect independent of the Contractor (feet and tenths of feet)
    - These methods and tables shall be an accurate reflection of the current configuration and displacement
- Hopper Ullage:
  - Sensor brand name and specifications
  - Certificates of calibration and/or manufacturer certificates of compliance
  - Any calculation done external to the instrumentation
- Hopper Volume:
  - Method used by Contractor to calculate hopper volume based on fore and aft hopper ullage
  - Table listing the hopper volume as a function of hopper ullage, certified by a licensed marine surveyor/ naval architect independent of the Contractor (feet and tenths of feet). Upon approval, each page of the ullage table will receive the visible, dated Silent Inspector stamp. The Contractor shall include his copy of the SI stamped table in the on-board copy of the DPIP.
    - These methods and tables shall be an accurate reflection of the current configuration and volume
- DragHead
  - DragHead Depth
    - Sensor brand name and specifications
    - Certificates of calibration and/or manufacturer certificates of compliance
    - Any calculation done external to the instrumentation
  - DragHead Depth Check
    - Method used

- If applicable sensor brand name and specifications
- If applicable certificates of calibration and/or manufacturer certificates of compliance
- If applicable any calculation done external to the instrumentation

- Drag Head Position
  - Sensor brand name and specifications
  - Any calculation done external to the instrumentation
  - Certificates of calibration and/or manufacturer certificates of compliance

- Slurry Density and Velocity Sensors:
  - Sensor brand name and specifications
  - Any calculation done external to the instrumentation
  - Certificates of calibration and/or manufacturer certificates of compliance
- Pump RPM
- Sensor brand name and specifications
  - Any calculation done external to the instrumentation
  - Certificates of calibration and/or manufacturer certificates of compliance
  - Description of the pump for which the RPM is reported
- Criteria used to determine
  - Minimum pump effort
  - Pumping water
  - Material recovery
  - Pumpout
- Pumpout
  - Criteria used to determine pumpout
  - Sensor brand name and specifications
  - Any calculation done external to the instrumentation
  - Certificates of calibration and/or manufacturer certificates of compliance
- Refractometer:
  - Brand
  - Resolution and accuracy
  - Method of calibration
- Criteria used to determine open/closed status of hopper
- Documentation of :
  - Test methods used by the Contractor to provide quality control of data
  - Verification that the reported values are applicable for the sensor and application
- Log of sensor performance and modifications

- Log of Contractor data backup as per Paragraph 3.3.7

Any changes to the computation methods shall be approved by the Silent Inspector Support Center prior to their implementation.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 REQUIREMENTS FOR REPORTED DATA

3.1.1 Date and Time

The date and time shall be reported to the nearest second and referenced to UTC time based on a 24-hour format.

3.1.2 Load Number

The load number documents each instance of loading the hopper with dredge material. Load numbering will begin at number 1 at the start of the contract, and will be incremented by 1 at the completion of each dump/emptying of the hopper.

3.1.3 Vessel Horizontal Positioning

Horizontal positioning of the antenna location shall be obtained using a positioning system operating with a minimum accuracy level of 1 to 3 meters horizontal Circular Error Probable (CEP). Positions shall be reported as Latitude/Longitude WGS 84.

3.1.4 Draghead Horizontal Positioning

Horizontal positioning of the dragheads shall be obtained using a positioning system operating with a minimum accuracy level of 1 to 3 meters horizontal Circular Error Probable (CEP). Positions shall be reported as Latitude/Longitude WGS 84.

3.1.5 Hull status

Open/closed status of the hopper, corresponding to the split/non-split condition of a split hull hopper dredge shall be monitored. For dredges with hopper doors, the status of a single door that is the first opened during normal disposal operations may be monitored. An “OPEN” value shall indicate the hopper door is open, or in the case of split hull dredges, the hull is split. A “CLOSED” value indicates the hopper doors are closed, or in the case of split hull dredges, the hull is not split.

3.1.6 Dredge Course

Dredge course-over-ground shall be provided using industry standard equipment. The Contractor shall provide dredge course over ground to the nearest whole degree with values from 000 (true north) to

359 degrees referenced to a clockwise positive direction onvention.

3.1.7 Dredge Speed

Dredge speed-over-ground shall be provided in knots using industry standard equipment with a minimum accuracy of 1 knot.

3.1.8 Dredge Heading

Dredge heading shall be provided using industry standard equipment. The dredge heading shall be accurate to within 5 degrees and reported to the nearest whole degree, with values from 000 (true north) to 359 degrees referenced to a clockwise positive direction convention.

3.1.9 Tide

Tide data shall be obtained using appropriate equipment to give the water level with an accuracy of + 0.1 feet and a resolution of 0.01 feet. Tide values above project datum described in the dredging specification shall be entered with a positive sign, those below with a negative sign.

Draft measurements shall be made in feet with an accuracy of 0.1 feet, and reported with a resolution to the nearest 0.01 feet relative to the fore and aft draft marks. Industry standard pressure sensors, or an equivalent system, may be used. Two draft sensors, one fore and one aft, are required. At the discretion of the SI Support Center, a system may use other means of measuring drafts if accuracies and resolution are maintained relative to the draft marks.

3.1.10 Draft

The Contractor shall provide, operate and maintain all hardware and software to meet these specifications. The Contractor shall be responsible for replacement, repair and calibration of sensors and other necessary data acquisition equipment needed to supply the required data.

Repairs shall be completed within 48 hours of any sensor failure. Upon completion of a repair, replacement, installation, modification or calibration, the Contractor shall notify the Contracting Officer’s Representative. The Contracting Office’s Representative may request re-calibration of sensors or other hardware components at any time during contract execution as deemed necessary.

The Contractor shall keep a log of sensor repair, replacement, installation, modification and calibration in the dredge’s onboard copy of the DPIP. The log shall contain a three-year history of sensor maintenance to include: the time of sensor failures (and subsequent repairs), the time and results of

sensor calibrations, the time of sensor replacements, and the time that backup sensor systems are initiated to provide required data. It shall also contain the name of the person responsible for the sensor work. Only sensors that affect the data reported in paragraph 3.3.6, “Reporting Metadata”, are affected by this logging requirement.

3.1.11 Hopper Ullage

Fore and aft hopper material ullage shall be measured to the nearest 0.01 feet with a minimum accuracy of + 0.1 feet relative to the hopper zero reference elevation. A minimum of two sensors is required, one fore and one aft. If only two sensors are used, they shall be mounted in locations as near as possible to the hopper centerline, and away from discharge flume turbulence and foam. If one sensor is offset to port or starboard, the other sensor shall be offset to the opposite side of the hopper. If more than one fore or one aft sensor is used, they shall be placed near the corners of the hopper and the average value of the fore sensors and the average value of the aft sensors shall be reported.

3.1.12 Hopper Volume

Hopper volume shall be reported in cubic yards, based on the most accurate method available for the dredge. The minimum standard of accuracy for hopper volume is interpolation from the certified ullage table, based on the average fore and aft ullage readings.

3.1.13 Displacement

Dredge displacement shall be reported in long tons, based on the most accurate method available for the dredge. The minimum standard of accuracy for displacement is interpolation from the certified displacement table, based on the average fore and aft draft readings.

3.1.14 Empty Displacement

Empty displacement shall be reported in long tons, and shall be the lightship value of the dredge, or the weight of the dredge with no material in the hopper, adjusted for fuel and water consumption.

3.1.15 Draghead depths

Draghead depths shall be reported with an accuracy of + 0.5 feet and a resolution to the nearest 0.1 feet as measured from the surface of the water with no tidal adjustments. Minimum accuracies are conditional to relatively calm water.

3.1.16 Slurry Densities of Dragarms

A density metering device, calibrated according to the manufacturer's specifications, shall be used to record the slurry density of each dragarm to the nearest 0.0001 g/cc with an accuracy of + 0.001g/cc. If the manufacture does not specify a frequency of re-calibration, calibration shall be conducted prior to commencement of work.

3.1.17 Slurry Velocities of Dragarms

A flow metering device, calibrated according to the manufacturer's specifications, shall be used to record the slurry velocity of each dragarm to the nearest 0.001 fps with an accuracy of + 0.1 fps. If the manufacture does not specify a frequency of re-calibration, calibration shall be conducted prior to commencement of work.
The slurry velocity shall be measured in the same pipeline inside diameter as that used for the slurry density measurement.

3.1.18 Pump RPM

Pump RPM shall be measured with the highest level of accuracy that is standard on the vessel operational displays, either at the bridge, at the drag tenders controls, or in the engine room. Dredges with multiple pumps per side shall report RPM for the pump that best describes the dredging process (typically the outboard pump). If requirements of paragraph 3.1.19 are determined based on pump RPM, then that value shall be reported.

3.1.19 Dragarm Production Criteria

For the purposes of SI, a dragarm pump can only operate one of three ways and each shall be mutually exclusive of the other two.

3.1.19.1 Minimum Pumping Effort

For Minimum Pumping Effort a “TRUE" value shall mean the hopper dredge’s dredge pumps are idling (assuring minimum dragarm intake velocity) or off. The logic can be triggered either with Pump revolutions per minute below a certain idle threshold or dragarm slurry velocity at or below the idle speed threshold (depending on the particular dredge plant and project). The only permissible values are “TRUE” and “FALSE”. The criteria for minimum pump effort may be unique to each dredge.

3.1.19.2 Pumping Water

For Pumping Water a “TRUE” value shall indicate the dredge is not digging material but is pumping water (or very low-density material) through the dredge pump(s). For example, when the slurry density is less than 1.05 grams per cubic centimeter, the dredge is considered to be pumping water. Other parameters such as pump vacuum may be used to satisfy the pumping water requirement. These criteria may be unique to each dredge. The only permissible

values are “TRUE” and “FALSE”.

3.1.19.3 Material Recovery

For Material Recovery a “TRUE” value shall indicate the dredge is digging material. The only permissible values are “TRUE” and “FALSE”. Example; when the slurry velocity is greater than 10 feet per second and the density is greater than 1.05 grams per cubic centimeter, material recovery is “TRUE”. These criteria may be unique to each dredge.

3.1.20 Pumpout

When the hopper is being pumped out, a “True” value shall be reported; when it is not, a “False” value shall be reported. The only permissible values are “TRUE” and “FALSE”.

3.2 SILENT INSPECTOR SHIP SERVER COMPUTER SYSTEM

The Dredge shall be equipped with an SI computer system consisting of a computer, monitor, keyboard, mouse, printer, data modem, UPS, and network hub. The computer system shall be a stand alone system, exclusive to the SI monitoring system, and will have USACE SI software installed on it. The Contractor is not responsible for maintaining the Silent Inspector computer software. If the SI Ship Server (including printer and other hardware) fails to operate properly, the SI Support Center will work with the Contractor to determine the nature of the problem. If a hardware problem is identified, or if a part of the system is physically damaged, then the Contractor shall be responsible for repairing it within 48 hours of determination of the condition.

3.2.1 Hardware Requirements

The Contractor shall provide and dedicate an on-board computer for the use of the Silent Inspector system. This computer shall run Corp’s software and receive data from the Contractor’s data reporting interface. This computer shall consist of, at a minimum, an Intel Celeron or AMD Sempron (or equivalent) microprocessor with no less than a 2.8 Gigahertz CPU. The computer shall contain a hard disk no smaller than 80 Gigabytes, include at least 1 Gigabyte of system memory, and support the Windows XP operating system. The Contractor shall be responsible for obtaining component vendor software drivers if the drivers are not provided with the latest release of the Windows XP operating system software. The computer shall also contain an Ethernet adapter that supports 10BaseT Unshielded Twisted Pair connections that shall connect to the network hub (Contractor shall supply a stranded Category 5 UTP patch cable to the network hub and one spare).

Also, the computer shall have a standard 101 key keyboard, Microsoft compatible mouse, two unoccupied serial ports, an unoccupied universal serial bus port, and a CD-ROM drive (16X speed or faster). It shall also have a minimum 17-inch (viewable-size

measured diagonally) video monitor capable of supporting at a minimum XVGA resolution of 1204X768 pixels and 32 bit color quality. The computer screen and keyboard will be located in a position suitable for data viewing and data entry to the satisfaction of the Contracting Officer’s Representative.

3.2.2 Network Hub

The SI Ship Server computer shall communicate via IEEE 802.3 Ethernet and the TCP/IP networking protocol. The Contractor shall provide a network hub to allow the temporary addition of the Contracting Officer’s representative’s portable computer to the computer network. The hub shall provide a minimum of four RJ45 ports that support Category 5 Unshielded Twisted-Pair Network wiring.

3.2.3 UPS

The Contractor shall supply an Uninterruptible Power Supply (UPS) for the computer and networking equipment. The UPS shall provide backup power at 1kVA for a minimum of 10 minutes. The UPS shall have a serial interface to the SI Ship Server computer to communicate UPS status. The Contractor shall ensure that sufficient power outlets are available to run all specified equipment.

3.2.4 Printer

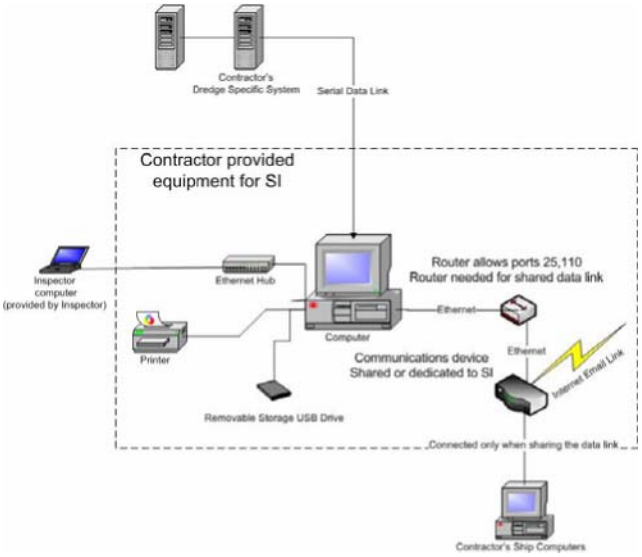
The Contractor shall supply a printer and driver software (when necessary) for use with the SI computer. The printer shall support the Universal Serial Bus interface (cable supplied by the Contractor), and shall have a minimum resolution of 300 dots per inch and have a rated print speed of 6 pages per minute (black and white) or higher and support color. Additionally, the printer shall have minimum paper capacity of 50 pages of 8.5X1 1 inch paper. The Contractor shall be responsible for maintaining a supply of printer paper and other consumables such as printer cartridges. Printer usage will not exceed 500 pages per month.

3.2.5 Data Communication Device

The Contractor may select any commercial satellite, cellular phone, or other data communications system available to transmit the data to the SI Database over an internet connection using Simple Mail Transfer Protocol (SMTP) based emails. The Contractor shall provide an Ethernet connection from the SI Ship computer to the data communication device, and Internet Transmission Control Protocol SMTP port 25 on the device shall remain open to allow email transmission from the SI computer.

If the communications device for transmitting data is not exclusive to the SI computer, then a router should be configured to block all inbound connections to the SI computer.

3.2.6 Figure of Contractor Provided Equipment




## 3.3 DREDGE MONITORING DATA

### 3.3.1 General

Onboard sensors will continually monitor dredge conditions, operations and efficiency and route this information into the shipboard dredge-specific system computer (DSS) to assist in guiding dredge operations. Portions of this Contractor-collected information shall be routed to the SI Ship Server computer on a near real-time basis for archival data storage and compilation into summary reports of dredging operations. The parameters reported to the SI Ship server shall include: date and time, load number, dredge position, draft, vessel speed and heading, draghead depth, ullage and hopper volume, displacement, tidal information, hull status, pumping status, minimum pump effort, density and velocity of the slurry material.

### 3.3.2 Data Reporting Interface

Standard sensor data shall be sent to the SI Ship Server computer via an RS-232 19200-baud serial interface. The serial interface shall be configured as 8 bits no parity and no flow control.

### 3.3.3 Data Measurement Frequency

Disposal activities shall be logged with high temporal and spatial resolution. Data shall be logged as a series of events. Each set of measurements (i.e. time, position, etc...) will be considered an event. All required information in paragraph 3.1 shall be collected within one second of the reported time. A data string for an event shall be sent to the SI Ship Server computer every 10 seconds or less; but never more frequently than one per

second. If the dredge is within 2 miles of the disposal or dredging area, a failure to send a data string to the SI Ship Server computer within 25 seconds of the previous event shall result in a dredge down status determination by the automated monitoring system. Activities, such as the start or end of a disposal sequence or an elapsed time of 10 seconds since the last event, shall have an event time resolution of one second.

### 3.3.4 Data Reporting

The system shall transmit data to the SI Database continuously from mobilization until the last USACE post-dredging survey has been accepted. If the data communications device (paragraph 3.2.5) is non-operable, either because of hardware failure or poor local operating conditions, or if the device does not have the capability to send approximately 1 megabyte of data per day, then manual backups shall be performed for each day the device is inoperable. Using protocol contained in the SI Control Center and SI Send Data programs, the Contractor shall download all collected data to an approved medium (CD, flash drive etc...), and transmit this file to the SI Database. The Contractor shall copy the data to a contractor provided flash drive using the Copy Data button on the SI Ship Server computer's SI Control Center Menu. The flash drive will then be moved to an email capable computer that has the SI Send Data program installed, and that program will be used to send the flash drive data to the SI database. The Contractor shall email a carbon copy of the data transfer notification to the Contracting Officer's Representative. Before downloading data, the Contractor shall click the Read Return Receipt button on the Control Center menu to read the receipt file from the previous transmission. Complete instructions on how to backup SI data, perform SI data transfer (Contractor) and the downloadable executable for SI Send Data can be found at http://si.usace.army.mil/QAR.asp. In the event of sensor failure, a manual dump log shall be maintained and submitted on a daily basis to the Contracting Officer's Representative.

### 3.3.5 Reporting Data Format

Data shall be reported as an eXtensible Markup Language (W3C standard XML 1.0) document as indicated below. Data tags that are marked optional may be omitted or reported according the XML convention of <TAG_NAME/> to signify an empty tag. Line breaks and spaces are added for readability, but the carriage return, line feed character combination is only added to delineate records (HOPPER_DREDGING_DATA tag) for actual data transmission.

```
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 <HOPPER_DATA_RECORD>
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  <LOAD_NUMBER> integer string </LOAD_NUMBER>
  <VESSEL_X coord_type="(LL)"> floating point string </VESSEL_X>
```

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<MIN_PUMP_EFFORT_STBD> **true/false/unknown string** </MIN_PUMP_EFFORT_STBD>
<PUMP_WATER_PORT> **true/false/unknown string** </PUMP_WATER_PORT>
<PUMP_WATER_STBD> **true/false/unknown string** </PUMP_WATER_STBD>
<PUMP_MATERIAL_PORT> **true/false/unknown string**</PUMP_MATERIAL_PORT>
<PUMP_MATERIAL_STBD> **true/false/unknown string** </PUMP_MATERIAL_STBD>
<PUMP_OUT_ON> **true/false/unknown string** </PUMP_OUT_ON>

</HOPPER_DATA_RECORD>
</HOPPER_DREDGING_DATA>
Carriage return – ASCII value 13
Line Feed – ASCII value 10

### 3.3.6 Reporting Metadata

Data shall be reported to the SI Ship Server using the tags and criteria specified in the following table:

| **Data Tag** | **Description** |
|---|---|
| DATE_TIME | mm/dd/yyyy hh:mm:ss defined as UTC time of the measurement in 24hr format. See paragraph 3.1.10 |
| LOAD _NUMBER | The load number starts at 1 and is incremented by 1 at the completion of the disposal phase of each loading cycle. See paragraph 3.1.2 |
| X_POSITION | Longitude in decimal degrees. West Longitude values are reported as negative. The attribute **coord_type** shall be LL. See paragraph 3.1.3 |

| | |
|---|---|
| Y_POSITION | Latitude values are to be reported in decimal degrees. Northerly Latitude values are reported as positive. The attribute **coord_type** shall be LL. See paragraph 3.1.3 |
| STBD_DRAG_X<br>PORT_DRAG_X | Draghead Longitude as computed or measured by the Contractor in decimal degrees. West Longitude values are reported as negative. The attribute **coord_type** shall be LL. See paragraph 3.1.4 |
| PORT_DRAG_Y<br>STBD_DRAG_Y | Draghead Latitude as computed or measured by the Contractor in decimal degrees. Latitude values are reported as positive. The attribute **coord_type** shall be LL. See paragraph 3.1.4 |
| HULL_STATUS | The only permissible values for hull status are OPEN or CLOSED. See paragraph 3.1.5 |
| VESSEL_COURSE | The dredge course over ground reported to the nearest whole degree. See paragraph 3.1.6 |
| VESSEL_SPEED | The dredge speed measured in knots at the reported time. See paragraph 3.1.7 |
| VESSEL_HEADING | The dredge heading reported to the nearest whole degree. See paragraph 3.1.8 |
| TIDE | Water level elevation reported in feet; positive above project datum, negative below. |
| DRAFT _FORE<br>DRAFT_AFT | Draft of vessel in feet relative to forward and aft draft marks. See paragraph 3.1.10 |
| ULLAGE_FORE<br>ULLAGE_AFT | Distance from the top of the hopper down to the surface of the dredged material in the hopper (measured in feet). See paragraph 3.1.11 |
| HOPPER_VOLUME | Hopper volume in cubic yards computed from the ullage sensor values. See paragraph |
| DISPLACEMENT | Displacement of the dredge at the time of measurement in long tons. See paragraph 3.1.13 |
| EMPTY_DISPLACEMENT | Weight of the dredge with a completely empty hopper in long tons. See paragraph 3.1.14 |
| DRAGHEAD_DEPTH_PORT<br>DRAGHEAD_DEPTH_STBD | Depth of the drag head measured from the surface of the water to the lowest fixed point on the draghead (often the heel). See paragraph 3.1.15 |
| PORT_SLURRY_DENSITY<br>STBD_SLURRY_DENSITY | Dragarm slurry density (grams/cubic centimeters). See paragraph 3.1.16 |
| PORT_SLURRY_VELOCITY<br>STBD_SLURRY_VELOCITY | Dragarm slurry velocity (feet/second). See paragraph 3.1.17 |
| PUMP _RPM _PORT<br>PUMP _RPM _STBD | The shaft revolutions per minute of the pumps that are used to pump excavated slurry. See paragraph 3.1.18 |

| Data Tag | Description |
|---|---|
| MIN_PUMP_EFFORT_PORT<br>MIN_PUMP_EFFORT_STBD | The only permissible values are TRUE or FALSE. See paragraphs 3.1.19 and 3.1.19.1 |
| PUMP_WATER_PORT<br>PUMP_WATER_STBD | The only permissible values are TRUE or FALSE. See paragraphs 3.1.19 and 3.1.19.2 |
| PUMP_MATERIAL_PORT<br>PUMP_MATERIAL_STBD | The only permissible values are TRUE or FALSE. See paragraphs 3.1.19 and 3.1.19.3 |
| PUMP_OUT_ON | The only permissible values are TRUE or FALSE. See paragraph 3.1.20 |

3.3.7 Contractor Data Backup

The Contractor shall maintain an archive of all data sent to the SI Ship Server computer during the dredging contract. The Contracting Officer’s Representative may require, at no increase in the contract price, that the Contractor provide a copy of these data covering specified time periods. The data shall be provided on PC format USB flash drive, CD-ROM, file transfer protocol (ftp) upload, or other storage medium acceptable to the Contracting Officer’s Representative. At the end of the dredging contract, the Contractor shall contact the national SI Support Center prior to discarding the data to ensure all data have been appropriately archived. The person who made the call, the date of the call, and the representative who gave permission to discard the data shall be recorded in a separate section at the end of the dredges on-board copy of the DPIP.

3.3.8 Additional Data

An example ASCII format file of sensor data, other than that listed in paragraph 3.3.5 “Reporting Metadata”, which will be supplied to the SI Ship Server computer shall be provided in the DPIP.

3.3.9 Data Reporting Example

```
<?xml version="1.0"?>
<HOPPER_DREDGING_DATA version=“2.0”>
 <DREDGE_NAME>Essayons</DREDGE_NAME>
  <HOPPER_DATA_RECORD>
     <DATE_TIME>04/11/2002 13:12:05</DATE_TIME>
     <LOAD_NUMBER>102</LOAD_NUMBER>
     <VESSEL_X coord_type="LL">10.123345</VESSEL_X>
     <VESSEL_Y coord_type="LL">-80.123333</VESSEL_Y>
     <PORT_DRAG_X coord _type="LL">10.123351</PORT_DRAG_X>
     <PORT_DRAG_Y coord_type="LL">-80.123337</PORT_DRAG_Y >
    <STBD_DRAG_X coord_type="LL">10.123347</STBD_DRAG_X>
```

```
      <STBD_DRAG_Ycoord_type="LL">-80.123339</STBD_DRAG_Y>
      <HULL_STATUS>CLOSED</HULL_STATUS>
      <VESSEL_COURSE>258</VESSEL_COURSE>
      <VESSEL_SPEED>3.4</VESSEL_SPEED>
      <VESSEL_HEADING>302</VESSEL_HEADING>
      <TIDE>-0.1</TIDE>
      <DRAFT_FORE>10.05</DRAFT_FORE>
      <DRAFT_AFT>1 5.13</DRAFT_AFT>
      <ULLAGE_FORE>10.11</ULLAGE_FORE>
      <ULLAGE_AFT>10.22</ULLAGE_AFT>
      <HOPPER_VOLUME>2555.2</HOPPER_VOLUME>
      <DISPLACEMENT>4444.1</DISPLACEMENT>
      <EMPTY_DISPLACEMENT>2345.0</EMPTY_DISPLACEMENT>
      <DRAGHEAD_DEPTH_PORT>55.10</DRAGHEAD_DEPTH_PORT>
      <DRAGHEAD_DEPTH_STBD>53.21</DRAGHEAD_DEPTH_STBD
      <PORT_DENSITY>1.02</PORT_DENSITY>
      <STBD_DENSITY>1.03</STBD_DENSITY>
      <PORT_VELOCITY>22.1</PORT_VELOCITY>
      <STBD_VELOCITY>23.3</STBD_VELOCITY>
      <MIN_PUMP_EFFORT_PORT>false</MIN_PUMP_EFFORT_PORT>
      <MIN_PUMP_EFFORT_STBD>false</MIN_PUMP_EFFORT_STBD>
      <PUMP_WATER_PORT>true</PUMP_WATER_PORT>
      <PUMP_WATER_STBD>true</PUMP_WATER_STBD>
      <PUMP_MATERIAL_PORT>false</PUMP_MATERIAL_PORT>
      <PUMP_MATERIAL_STBD>false</PUMP_MATERIAL_STBD>
      <PUMP_OUT_ON>false</PUMP_OUT_ON>
  </HOPPER_DATA_RECORD>
</HOPPER_DREDGING_DATA>
<cr>
<lf>
```

## 3.4 PERFORMANCE REQUIREMENTS

The Contractor’s Silent Inspector system shall be fully operational at the start of dredging operations. To meet contract requirements for operability, the Contractor’s system shall provide a minimum 95 percent data return and be 95 percent compliant with DPIP requirements. Data return percentage is defined as the total number of quality data strings sent by the DSS system to the SI Ship Server computer divided by the total possible number of records that could be sent by a system in good working order. Quality data strings are considered to be those providing accurate values for at least 34 of the 35 parameters reported. DPIP compliance is determined by percent of items listed in paragraph 1.5 to be at minimum compliance. After fifty percent project completion, combined percentage of data return and DPIP compliance should equal 95 percent or greater. If repairs necessary to restore 95 percent data return are not made within 48 hours, or if the Contractor fails to report required data within the specified time window for dredge measurements (see paragraph 3.3.2 “Data Measurement Frequency” and 3.3.3 “Data Reporting”); the system will be declared not fully operational, and the Contractor will be assessed liquidated damages equivalent to the additional oversight hours that would be required for Corps personnel to be on site from the first full day after the system

is deemed not operational through to the time when the system is returned to fully operational status.

## 3.5 QUALITY ASSURANCE CHECKS

The quality assurance checks listed below are a part of the annual SI dredge certification procedure. Quality assurance checks are required prior to the commencement of dredging and, at the discretion of a Contracting Officer's Representative, periodically throughout the duration of the contract. Detailed instructions for performing these checks and a spreadsheet for recording the results are available at http ://si.usace.army.mil/downloads.asp.

### 3.5.1 Displacement (Draft) Check

The Contracting Officer's Representative will periodically verify the accuracy of the fore and aft draft sensors by comparing the vessel hull draft marks to the corresponding sensor readings indicated on the SI screen. The vessel's hull draft reading will be viewed from a contractor supplied auxiliary vessel circling the dredge. The Contracting Officer's Representative will review the difference between averaged drafts recorded by the instruments and those estimated from the draft marks to insure that the system is operating within the acceptable accuracy of approximately + 0.1 ft. in calm seas conditions, and will direct the Contractor to re-calibrate or repair system components as necessary. This check may be performed separately or as a part of the Water Load Test.

### 3.5.2 Draghead Depth Check

The Contracting Officer's Representative may require periodic calibration checks of the reported draghead depth using manual means such as tape measures or sounding lines to directly measure draghead depth. The Contractor shall furnish a steel tape, chain, or wire with clearly visible flags/tags placed at 1 foot increments within the operational range of the dragarm. These devices shall be capable of measuring the depth below the water surface to the lowest fixed point of each draghead (often the heel) with sufficient length to measure 5 feet more than the maximum project depth. Pressure sensors may be used to verify calibration of the draghead sensors only in areas where current flow past the vessel/dragarm cannot be reduced sufficiently to allow safe handling of manual measuring devices. Pressure sensors, used for this purpose shall be vented pressure gages and shall be subjected to an annual manufacturer's calibration. Prior to the dragarm depth check, the sensor shall be checked at a known depth, and may be required to be zeroed at this point according to manufacturer's specifications. Care shall be taken not to kink the cable or restrict the vent during deployment.

The Contracting Officer's Representative will review the draghead depth data to insure that the system is operating within acceptable accuracy, and may direct the Contractor to re-calibrate or repair

system components as necessary. If a bubbler type system is used, weekly calibration of the draghead sensors is recommended, as they are sensitive to environmental conditions.

### 3.5.3 Hopper Ullage Check

The Contracting Officer’s Representative will periodically check the reported hopper ullage using a tape measure or other distance measuring device. The Contractor shall furnish a clearly readable weighted tape, marked in tenths of a foot, capable of measuring throughout the full range of hopper depth. The weight for this tape shall be a 6-inch diameter disk weighing between 2 and 3 pounds. The Contracting Officer’s Representative will review the hopper ullage data to insure that the system is operating within acceptable accuracy (0.1 feet), and may direct the Contractor to re-calibrate or repair system components as necessary. This check may be performed separately or as a part of the Water Load Test.

### 3.5.4 Position Check

During inspection the reported position of the dredge will be verified by comparison with readings from a handheld GPS receiver. Throughout the contract, the Contracting Officer’s Representative will periodically take readings from an independent GPS to verify locations.

### 3.5.5 Water Load Test

Water Tests shall consist of pumping the hopper out to its lowest level and then filling it to capacity with water, taking ullage and draft measurements at both levels to determine hopper volume and displacement. The objective of the water test is to validate the dredge’s reported displacement and hopper volumes. If the results of the water test indicate that the system is not operating within acceptable accuracy, the Contractor shall correct the deficiencies causing the error and repeat the water test until the results are acceptable.

The Contractor shall provide a handheld refractometer with automatic temperature compensation to measure the hopper water specific gravity during water tests. The refractometer shall be capable of measuring the hopper water specific gravity with a resolution of 0.001 and minimum accuracy of + 0.001. The Contractor shall also provide a water-sampling device to retrieve a sufficient volume of water from various depths in the hopper to accurately determine specific gravity with the refractometer, and a sufficient volume of deionized water for calibration of the device.

## 3.6 LIST OF ITEMS TO BE PROVIDED BY THE CONTRACTOR

DPIP Sec 1.5 Dredge Plant Instrumentation Plan

| | |
|---|---|
| SI SYSTEM | |
| Sensor Instrumentation | Sec. 3.1 Specifications for Reported Data |
| Ship Server Computer | Sec. 3.2 Silent Inspector Ship Server Computer |
| DREDGE DATA | |
| Event documentation | Sec. 3.3.3 Data Measurement Frequency |
| Summary reports for each load | Sec. 3.3.4 Data Reporting |
| Daily detailed data backups | Sec. 3.3.4 Data Reporting |
| QA EQUIPMENT ON DREDGE | |
| Ullage tape | Sec. 3.5.3 Hopper Ullage Check |
| Dragarm depth chain | Sec. 3.5.2 Draghead Depth Check |
| Refractometer –measuring in grams/cubic centimeter with a resolution of 0.001 and a minimum accuracy of + 0.00 1 with calibration water | Sec. 3.4.5 Water Load Test |
| Water sampling device | Sec. 3.4.5 Water Load Test |

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DIVISION 35 - WATERWAY AND MARINE CONSTRUCTION

SECTION 35 20 23.13

SCOW SILENT INSPECTOR PART 1

PART 1 GENERAL

1.1 DESCRIPTION

The work under this contract requires use of the Silent Inspector System to monitor the trip number, the time-position history for the scow, course over ground, speed and the hull status. Instrumentation will also be required to provide the heading and draft information, and ullage readings to calculate Total Dry Solids (TDS) of the sediment load. This performance-based specifications section identifies the minimum required output and precision and instrumentation requirements. The requirements may be satisfied using equipment and technical procedures selected by the Contractor.

1.2 SUBMITTALS

Government approval is required for submittals with a “G” designation; submittals not having a “G” designation are for information only. When used, a designation following the “G” designation identifies the office responsible for review of the submittal for the Government. The following shall be submitted in accordance with Section 01 33 00, “SUBMITTAL PROCEDURES”:

SD-01Preconstruction Submittals

Dredge Plant Instrumentation Plan; G, SAM-

OP-J SD-07 Certificates

Letter of Silent Inspector

Certification; G, OP

1.3 PAYMENT

No separate payment will be made for installation, operation and maintenance for the SI system as specified herein for the duration of the dredging operations; all costs in connection therewith will be considered a subsidiary obligation of the Contractor and covered under the contract unit prices for dredging in the bidding schedule.

1.4 SILENT INSPECTOR CERTIFICATION

The Contractor is required to have a current Silent Inspector Certification for the scow instrumentation system to be used under this contract not later than ten working days after issuance of the Notice to Proceed. Certification shall be based on an on-site scow inspection conducted by Silent Inspector Support Center personnel.

An Inspection Shall Include:

- A series of data quality checks as described in paragraph 3.4 “Compliance Inspection and Quality Assurance Checks”,
- Verification of data acquisition and transfer (Paragraph 3.2),
- Review of the Dredge Plant Instrumentation Plan (DPIP) as described in Paragraph 1.5.

A Silent Inspector Certification is valid for one year from the date of certification if the system is not turned off, disconnected or removed from the scow. The owner or operator of the scow should contact the SI Support Center at 1-877-840- 8024 on an annual basis to schedule re-inspection, allowing ample time for recertification, and coordinate this with all local authorities. The Contractor shall have personnel, who are familiar with the SI system instrumentation and who have the ability to recalibrate the sensors, on site during the inspection. Re-inspection is required for any yard work which produces modification to displacement (i.e. change in scow lines, repositioning or repainting hull marks), any yard work which produces modification to bin volume (change in bin dimensions or addition or subtraction of structure) or changes in sensor type or location; these changes will be reported in the sensor log section of the DPIP.

1.5 DREDGE PLANT INSTRUMENTATION PLAN (DPIP)

The Contractor shall have a DPIP on file with the National SI Support Center. The Contractor shall also maintain a copy of the DPIP on a working dredge on site which is easily accessible to Government personnel at all times. This document shall describe how sensor data will be collected, how quality control on the data will be performed, and how sensors/data reporting equipment will be calibrated and repaired if they fail. A description of computed scow specific data and how the sensor data will be transmitted to the Silent Inspector Database will also be included. The Contractor shall submit to the SI Support Center any addendum or modifications made to the plan, subsequent to its original submission, prior to Notice to Proceed.

The DPIP shall include the following as a minimum: *(DPIP must have table of content in the following order)*

- Dredging Company
  - Dredge Point of Contact
  - Phone Number
- Scow Monitoring System Provider
  - Scow Monitoring System Point of Contact
  - Telephone Number

- Scow ID
- Sensor repair, replacement, installation, modification or calibration methods
- Data reporting equipment
- Procedure for providing sensor data/computed data to SI Database via e-mail
- System Power Supply
- System Battery Charge Method
- If the system is left in place past the end of the contract, how will the contract number be changed
- System telemetry
- Dimensioned Drawings of the Scow
- Data reporting equipment
- Procedure for providing sensor data/computed data to SI Database via e-mail
- System Power Supply
- System Battery Charge Method
- If the system is left in place past the end of the contract, how will the contract number be changed
- System telemetry
- Dimensioned Drawings of the Scow
    - A typical plan and profile view of the scow showing:
        - Bin cross sections
        - Locations of required sensors referenced to:
            - Fore and aft perpendicular
            - bin length, depth, width, zero reference
            - external hull draft markings (latitudinal, longitudinal, keel)
            - Each other
        - overall scow dimensions
- Criteria and method used to increment trip number
- Description of how the UTC time stamp is collected
- Positioning system
    - brand name and specifications
    - sampling rates for data acquisition (standard vs. dump)
    - scow heading instrumentation brand name and specifications
    - instrument used to calculate COG
    - any calculation done external to the instrumentation
    - certificates of calibration and/or manufacturer certificates of compliance
    - A description of how scow speed is determined
- Hull status
    - Instrumentation brand name and specifications
    - Certificates of calibration and/or manufacturer certificates of compliance

- Any calculation done external to the instrumentation
- Criteria for determining hull open/closed

- Drafts:
  - instrumentation brand name and specifications
  - certificates of calibration and/or manufacturer certificates of compliance
  - any calculation done external to the instrumentation
  - criteria used to determine draft
- Displacement:
  - Method used by Contractor to calculate displacement based on fore and aft draft
  - Tables listing (fresh and salt water) displacement as a function of draft certified by a licensed marine surveyor/ naval architect independent of the contractor (ft and tenths of ft)
    - o These methods and tables must be an accurate reflection of the current configuration and displacement
- Bin Ullage:
  - Sensor brand name and specifications
  - Certificates of calibration and/or manufacturer certificates of compliance
  - Any calculation done external to the instrumentation
  - Criteria used to determine ullage
- Volume:
  - Method used by Contractor to calculate bin volume based on fore and aft bin ullage
  - Table which lists the bin volume as a function of bin ullage certified by a licensed marine surveyor/ naval architect independent of the Contractor (ft and tenths of feet). Upon approval, each page of the ullage table will receive the visible, dated Silent Inspector stamp. The Contractor shall include his copy of the SI stamped table in the on-board copy of the DPIP.
    - o These methods and tables must be an accurate reflection of the current configuration and volume
- Refractometer
  - Brand
  - Resolution and minimum accuracy
  - method of calibration
- Bin status criteria used to determine open/closed measurements of bin status
- Contractor Data
  - Backup frequency

        - Backup method
        - post processing
    - Archive capability
    - Documentation of :
        - test methods used by the Contractor to provide quality control of data
        - verification that the reported values are applicable for the sensor and application
    - Log of sensor performance and modifications

Any changes to the computation methods during the contract shall be approved by the Silent Inspector Support Center prior to their implementation.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 REQUIREMENTS FOR REPORTED DATA

The Contractor shall provide, operate and maintain all hardware and software to meet the specifications. The Contractor shall be responsible for replacement, repair and calibration of sensors and other necessary data acquisition equipment needed to supply the required data.

Repairs shall be completed within 48 hours after any sensor failure occurs. Upon completion of a repair, replacement, installation, modification or calibration the Contractor shall notify the Contracting Office’s Representative. The Contracting Office’s Representative may request re-calibration of sensors or other hardware components at any time during contract execution as deemed necessary.

The Contractor shall keep a log of sensor repair, replacement, installation, modification and calibration in the dredge’s onboard copy of the DPIP. The log shall contain a three year history of sensor maintenance to include: the time of sensor failure (and its subsequent repair), the time and results of sensor calibrations, the time of sensor replacements, and the time when backup sensor systems are initiated to provide required data. It shall also contain the name of the person responsible for the sensor work. Only sensors that affect the data reported in paragraph 3.2.6, “Reporting Data Metadata”, are affected by this logging requirement.

3.1.1 Scow Name

Each scow shall be assigned a unique name that will remain constant from one dredge operation to the next.

3.1.2 Trip Number

A trip number shall be reported for each dump run. The trip number will be incremented at the completion of each dump/emptying of the scow. Each scow shall maintain a separate trip numbering sequence – i.e. each scow will start with a trip number of 1, that will be incremented by 1 each time that scow completes a dump.

3.1.3 Horizontal Positioning

Horizontal positioning of the antenna location or center of scow shall be obtained using a Positioning System operating with a minimum accuracy level of 1 to 3 meters horizontal Circular Error Probable (CEP). Positions shall be reported as Latitude/Longitude WGS 84.

3.1.4 Date and Time

The date and time shall be reported to the nearest second and referenced to UTC time based on a 24 hour format.

3.1.5 Hull Status

Open/closed status of the bin, corresponding to the split/non-split condition of a split hull scow shall be monitored. An “OPEN” value shall indicate the hull is split. A “CLOSED” value shall indicate the hull is not split. For non-dump scows, the “OPEN” value shall indicate that the bin is in the process of being unloaded, either by pumping or mechanical means.

3.1.6 Scow Course

Scow course-over-ground shall be provided using industry standard equipment. The Contractor shall provide scow course over ground (to the nearest whole degree) with values from 000 (true north) to 359 degrees referenced to a clockwise positive direction convention.

3.1.7 Scow Speed

Scow speed-over-ground shall be provided in knots using industry standard equipment with a minimum accuracy of 1.0 knots and resolution to the nearest 0.1 knot.

3.1.8 Scow Heading

Scow heading shall be provided using industry standard equipment. The scow heading shall be accurate to within 5 degrees and reported to the nearest whole degree, with values from 000 (true north) to 359 degrees referenced to a clockwise positive direction convention.

3.1.9 Scow Draft

Draft measurements shall be in feet with an accuracy of 0.1 foot,

and reported with a resolution to the nearest 0.01 foot relative to the fore and aft draft marks. Each sensor shall be placed at an optimum location on the scow. Industry standard pressure sensors, or an equivalent system, may be used. Two draft sensors, one fore and one aft, will be required. At the discretion of the SI Support Center, a system may use other means of measuring drafts if accuracies and resolution are maintained relative to the draft marks.

3.1.10 Scow Displacement

Scow displacement shall be reported in long tons, based on the most accurate method available for the scow. The minimum standard of accuracy for displacement is interpolation from the displacement table, based on the average fore and aft draft readings.

3.1.11 Scow Bin Ullage

Fore and aft bin ullage shall be measured with an accuracy of 0. 1 foot and reported with a resolution of 0.01 feet relative to the bin zero reference elevation. A minimum of two sensors is required, one fore and one aft. If only two sensors are used, they shall be mounted in locations as near as possible to the bin centerline. If one sensor is offset to port or starboard, the other sensor shall be offset on the opposite side of the bin. If more than one fore or one aft sensor is used, they shall be placed near the corners of the hopper and a forward average value and aft average value shall be reported. At the discretion of the SI Support Center, a system may use other means of measuring ullage if the required accuracy and resolution are maintained.

3.1.12 Scow Bin Volume

Scow bin volume shall be reported in cubic yards, based on the most accurate method available for the scow. The minimum standard of accuracy for bin volume is interpolation from the bin ullage table, based on the average fore and aft ullage readings.

3.1.13 Scow Lightship

Scow Lightship value shall be reported in long tons and shall be the value of the (empty) displacement of the scow; the weight of the scow with no material in the bin.

3.1.14 Tons Dry Solids (TDS)

TDS shall be reported in long tons using the following equation:

TDS= (((mass of dredged material !volume of dredged material) - density of water)! (density of solids-density of water))* density of solids *volume of dredged material

Where:

mass of dredged material in kg = (loaded scow displacement in LT -lightship displacement in LT )* 1016 kg/LT
volume of dredged material in $m^3$ = (loaded bin volume in $yd^3$- residual bin volume in $yd^3$)* 0.7646$m^3/yd^3$
density of water in $kg/m^3$ = specific gravity of water in $g/cm^3$* 1000
and density of solids in $kg/m^3$= specific gravity of dredged material in $g/cm^3$ * 1000

For this job, TDS shall be calculated using a density of solids of _____$kg/m^3$,
based on the material being dredged.

***sand and gravel will range between 2,650 & 2,670 $kg/m^3$ ; cohesive silts and clays vary between 2,680 and 2,750 $kg/m^3$ )***

## 3.2 DATA REPORTING REQUIREMENTS

Contractor collected information shall be transmitted to the SI Database. The parameters which shall be reported to the SI Database include: trip number, date and time, hull status, scow course, scow speed, scow heading, draft, bin ullage and volume, displacement, and TDS.

### 3.2.1 Data Reporting Interface

The Contractor may select any commercial satellite, cellular phone, or other data communications systems available to transmit the data to the SI Database via the Internet in the required mail message format. The data transition process from the scow to the SI database must be automated. The data may be sent from the scow directly to the SI database or to a shore based computer. Data transmitted to the SI Database should be raw data; any processing of the data conducted shore side shall be done using an automated software or programming routine. A description of this process shall be included in the DPIP.

### 3.2.2 Data Measurement Frequency

Data shall be logged as a series of events. Each set of measurements (e.g. time, position, etc...) will be considered an event. Data shall be measured with sufficient frequency by the scow system to resolve the events to the accuracy specified in the following table.

| Event Type | Scow Status | Event Description | Event Time Resolution | Event Position Resolution |
|---|---|---|---|---|
| 1 | Stationary/loading with hull status “CLOSED” | An elapsed time of 1 hour since the last event | 1 minute | NA |
| 2 | Moving with hull status “CLOSED” | Distance from the last event position equals or exceeds 0.5 nautical mile | 1 second | +/- 10 ft |
| 3 | Hull status “OPEN” | A position must be recorded within 1 second of the hull status going from CLOSED to OPEN – distance from the last event position | 1 second | +/- 10 ft |

The system shall have the capability of storing at least the previous 1000 events. A time trigger may be used for event types 2 and 3 at the discretion of the SI Support Center, if it can be demonstrated that the data density will be consistent with the above logic.

3.2.3 Data Reporting

The system shall report the event history via Simple Mail Transport Protocol (SMTP) e-mail message to the SI Database Server. For this contract data will be reported ***. on an event basis (sent as data is collected) – OR - on a load basis (all the events for a load cycle are sent at the same time, immediately upon the completion of the cycle) - OR - at regular intervals such that the time between data collection and its reporting does not exceed 6 – OR- 12 – OR - 24 hours.*** All data for an event shall be transmitted to the SI Database no later than 24 hours after the event’s occurrence.

If the scow has a certified system aboard, it shall transmit data continuously to the SI Database from mobilization until the final USACE post-dredging survey has been accepted. If the scow does not have a certified system at the time of issuance of the Notice to Proceed, it shall begin transmitting data at the time it is certified prior to the start of dredging operations, and continue until acceptance of the final USACE dredging survey.

In the event of sensor failure, a manual dump log shall be maintained and submitted on a daily basis to the Contracting Officer’s Representative.

3.2.4 Mail Message Format

The Simple Mail Transport Protocol, SMTP, (Internet FRC 2821) shall be used to report data to the SI Database. Mail messages shall have the following contents (Internet RFC 2822):

To: sidatatransfer@usace.army.mil

From: contractor's email address

Subject: SISDATA Transfer
Attachment: SI SDATA html
file

Mail message start of body
SISDATA
SI Scow Data Transfer
Blank line

Optional additional annotations from the Contractor – all data after the blank line are ignored.

End of message

### 3.2.5 Mail Attachment File Format

The attached data file shall be a MIME encoded (Internet RFC 2045) Extensible HyperText Markup Language (W3C standard XHTML 1.1) document. Any length of data may be included, but the file attachment size should not exceed six Megabytes. Only the html, table, tr, th, td, h2, h3 and body tags are permissible.

```
<?xml version=" 1.0" encoding="UTF-8"?>
<!DOCTYPE html
PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1 -
strict.dtd">
<html xmlns="http://www.w3 .org/1 999/xhtml" xml:lang="en"
lang="eng"> <body>

<h2 class = “contract”>contract number</h2>
<h3 class = “vessel _name”>scow name</h3>

<table class = “SISDATA”>
<tr>
<th>TRIP_NUMBER</th>
<th coord _type = “(LL)”>X_POSITION</th>
<th coord _type = “(LL)”>Y_POSITION</th>
<th>DATE_TIME</th>
<th>HULL_STATUS</th>
<th>SCOW_COURSE</th>
<th>SCOW_SPEED</th>
<th>SCOW_HEADING</th>
<th>SCOW_AVG_DRAFT</th>
```

```
<th>SCOW_FWD_DRAFT</th>
<th>SCOW_AFT_DRAFT</th>
<th>SCOW_DISPLACEMENT</th>
 <th>ULLAGE_FWD</th>
 <th>ULLAGE_AFT</th>
 <th>SCOW_BIN_VOLUME</th>
 <th>SCOW_LIGHTSHIP</th>
 <th>SCOW_TDS</th>
 </tr>

 <tr>
 <td>trip number
 value</td> <td>x
 position
 value</td> <td>y
 position value</td>
 <td>date time
 value</td> <td>hull
 status value</td>
 <td>scow course
 value</td> <td>scow
 speed value</td>
 <td>scow heading
 value</td>
 <td>average draft
 value</td> <td>fwd
 draft value</td>
 <td>aft draft
 value</td>
 <td>displacement
 value</td> <td>fwd
 ullage value </td>
 <td>aft ullage value
 </td> <td>bin volume
 value</td> <td>scow
 lightship value</td>
 <td>tds value</td>
  </tr>
  <tr>
  ... repeated for additional data records
  </tr>
  </table>
  </html>
  </body>
```

3.2.6 Reporting Metadata

Data shall be reported to the SI database using the tags and criteria specified in the following table:

| **Header Tag** | **Tag Notes** |
|---|---|
| vessel_name | The name of the scow |

| | |
|---|---|
| contract | The USACE contract number under which the work is being performed, or the applicable permit number. |
| **Header Tag** | **Tag Notes** |
| TRIP _NUMBER | Trip numbers shall start at 1 at the beginning of work for each contract or permit. Trip numbers are incremented at the completion of the disposal/placement part of the scow cycle. Each scow maintains a unique set of trip numbers. |
| X_POSITION | Longitude in decimal degrees. West Longitude values are reported as negative. |
| Y_POSITION | Latitude in decimal degrees. North Latitude values are reported as positive. |
| DATE_TIME | mm/dd/yyyy hh:mm:ss defined as UTC time in 24hr format. |
| HULL _STATUS | OPEN or CLOSED are the only permissible values. |
| SCOW _COURSE | The scow course over ground reported from 0 to 359 |
| SCOW_SPEED | The scow speed measured in knots at the reported |
| SCOW _HEADING | The scow heading reported from 0 to 359 degrees. |
| SCOW _AVG _DRAFT | The representative draft of scow below waterline in feet. This is the draft of scow computed from an average reading of the fore and aft sensors at an optimum location. |
| SCOW _FWD _DRAFT SCOW _AFT _DRAFT | Draft of scow below waterline in feet relative to forward and aft draft mark locations. |
| SCOW_DISPLACEMENT | Weight of the scow at the time of measurement in long tons as described in DPIP. |
| SCOW_AVG_ULLAGE | The representative ullage of scow bin in feet. This is the bin ullage measure of scow computed from an average reading of the fore and aft sensors at an optimum location. |
| SCOW_ULLAGE_FWD SCOW _ULLAGE _AFT | Distance from the bin level zero down to the surface of the dredged material in the bin (measured in feet). |
| SCOW_BIN_VOLUME | Volume of the bin in cubic yards computed from the ullage sensor values. |
| SCOW_LIGHTSHIP | The value of the (empty) displacement of the scow |
| SCOW_TDS | Tons Dry Solids calculated in Long Tons 3.1.13 |

3.2.7 Contractor Data Backup

The Contractor shall maintain an archive of all data sent via SMTP to the SI Database. The Contracting Officer’s Representative may require (at no increase in the contract price) that the Contractor provide a copy of these data covering specified time periods. The data shall be provided on PC format USB flash drive, CD-ROM, file

transfer protocol (ftp) upload, or other storage medium acceptable to the Contracting Officer's Representative. At the end of the dredging contract the Contractor is responsible for contacting the national SI Support Center prior to discarding the data to ensure all data have been appropriately archived. The person who made the call, the date of the call, and the representative who gave permission to discard the data should be recorded in a separate section at the end of the Contractor's copy of the DPIP.

### 3.2.8 Data Reporting Example

```
<?xml version="1 .0" encoding="UTF-8"?>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
 "http://www.w3.org/TR/xhtml1/DTD/xhtml1 -strict.dtd">
<html xmlns="http://www.w3 .org/1 999/xhtml" xml:lang="en" lang="eng">
<body>
<h2 class = “contract”>DACW0 1-03 -C-00 11 </h2>
<h3 class = “vessel _name”>COE Scow 3</h3>
<table class = “SISDATA”>
<tr>
<th>TRIP_NUMBER</th>
<th coord _type = “LL“>X_POSITION </th>
<th coord _type = “LL“>Y_POSITION </th>
<th>DATE_TIME</th>
<th>HULL_STATUS</th>
<th>SCOW_COURSE</th>
<th>SCOW_SPEED</th>
<th>SCOW_HEADING</th>
<th>SCOW_AVG_DRAFT</th>
<th>SCOW_FWD_DRAFT</th>
<th>SCOW_AFT_DRAFT</th>
<th>SCOW_DISPLACEMENT</th>
<th>SCOW_AVE_ULLAGE</th>
<th>SCOW_ULLAGE_FWD</th>
<th>SCOW_ULLAGE_AFT</th>
<th>SCOW_BIN_VOLUME</th>
<th>SCOW_LIGHTSHIP</th>
<th>SCOW_TDS</th>
</tr>
<tr>
<td>2/td>
<td>-82.479309 </td>
<td>28.073948 </td>
<td>04/1 1/2002 13:11 :55</td>
<td>OPEN</td> <td>3 .2</td>
<td>3 1 2</td> <td>3 1
3</td> <td>5 .72</td> <td>5
. 53</td> <td>5 .91 </td>
<td>2560.4</td> <td>2.
52</td> <td>2. 31 </td>
<td>2.72</td> <td>5 006.
8</td>
```

<td>1 052.2</td>
<td>4376.3</td>
</tr>
<tr>
<td>3</td>
<td>-82.4793 19 </td>
<td>28.073968 </td>
<td>04/1 1/2002 13:12:05</td>
<td>CLOSED</td> <td>3
.2</td>
<td>3 11 </td>
<td>3 1 2</td>
<td>5 .45</td>
<td>5 .0</td>
<td>5 .91 </td>
<td>2563 .4</td>
<td>2. 52</td>
<td>2. 31 </td>
<td>2.72</td>
<td>493 6. 8</td>
<td>1 052.2</td>
<td>43 98.7</td>
</tr>
</table>
</body>
</html>

## 3.3 PERFORMANCE REQUIREMENTS

The Contractor’s Silent Inspector system shall be fully operational at the start of dredging operations. To meet contract requirements for operability, the Contractor’s system shall provide a minimum 95 percent data return and be 95 percent compliant with DPIP requirements. Data return percentage is defined as the total number of quality records sent, divided by the total possible number of records that could be sent by a system in good working order. Quality data strings are considered to be those providing accurate values for at least 16 of the 17 data parameters reported. DPIP compliance is determined by percent of items listed in Paragraph 1.5 to be at minimum compliance. After fifty percent project completion, combined percentage of data return and DPIP compliance should equal 95 percent or greater. If repairs necessary to restore 95 percent data return are not made within 48 hours, or if the Contractor fails to report required data within the specified time window for scow measurements (see paragraph 3.2.2 “Data Measurement Frequency” and 3.2.3 “Data Reporting”); the system will be declared not fully operational, and the Contractor will be assessed liquidated damages equivalent to the additional oversight hours that would be required for Corps personnel to be on site from the first full day after the system is deemed not fully operational through to the time when the system is returned to operational status. For this contract, the liquidated damages shall be ***$*** per day.

## 3.4 COMPLIANCE INSPECTION AND QUALITY ASSURANCE CHECKS

The Contractor shall submit a test data package to the SI Database from the system on each scow and have it accepted by the SI Support Center prior to scow compliance inspection.

Quality assurance checks are required prior to the commencement of dredging, and at the discretion of a Contracting Officer's Representative periodically throughout the duration of the contract. As part of the testing requirements, the Contractor shall provide the Contracting Officer's Representative a visual display of measurements from the scow monitoring system in the same units that are submitted to the SI database. These measurements shall be provided in real-time on the scow or near real-time on location. The Contractor shall also submit data collected during the inspection from the scow monitoring system to the SI database at completion of inspection.

### 3.4.1 Position Check

During certification inspections, both the static position of the scow and a track of movement to and from the dump area will be monitored by an independent GPS unit and compared to the SI collected data. A contractor furnished tug will be required to transport the scow during this check, which will monitor time position of the scow, and verify that data collection intervals change as the scow enters and leaves the disposal area. Throughout the contract, the Contracting Officer's Representative will periodically verify reported positions by independently measuring with other equipment to verify locations.

### 3.4.2 Hull Status Check

The Contracting Officer's Representative will document the angle at which the hull status sensor registers "OPEN" and "CLOSED".

### 3.4.3 Draft Sensor Check

Draft sensors will be checked by comparing the draft measurements reported by the monitoring system, with the draft measurements from the scows draft marks. Drafts will be checked light, loaded, and for other intervals at the inspector's discretion.

### 3.4.4 Bin Ullage Check

The Contracting Officer's Representative will periodically check the reported bin ullage against manually measured values using contractor provided tape, listed in Paragraph 3.5, measuring from multiple locations along the combing or from sensor location at his discretion.

### 3.4.5 Water Test

A water test will be required for one scow in each class

operated by the Contractor. The water test shall consist of pumping the bin out to the Maximum Ullage Value Accurately Measured by Sensors (MUVAMS) and then filling the bin with water to capacity and comparing the system-measured water specific gravity to that of the value determined by analyzing water samples retrieved from the bin. If the results of the water test indicate that the computed displacement is not within five percent of the bin volume, the Contractor shall be required to correct the deficiencies causing the error and repeat the water test until the results are acceptable. Other water tests may be conducted during the contract for any scow at the discretion of the Contracting Officer's Representative.

## 3.5 LIST OF ITEMS TO BE PROVIDED BY THE CONTRACTOR

| | |
|---|---|
| DPIP | Sec 1.5 Dredge Plant Instrumentation Plan |
| SI SYSTEM | |
| Sensor Instrumentation | Sec. 3.1 Specifications for Reported Data |
| SCOW DATA | |
| Event documentation | Sec. 3.2.2 Data Measurement Frequency |
| Data reports | Sec. 3.2.3 Data Reporting |
| QA EQUIPMENT ON DREDGE | |
| Ullage tape | Sec. 3.4.4 Bin Ullage Check |
| Refractometer –measuring in grams/cubic centimeter with a resolution of 0.001 and a minimum accuracy of +/- 0.00 1 with calibration water | Sec. 3.4.5 Water Test |
| Water sampling device | Sec. 3.4.5 Water Test |